Why Industry Moves SOUTH

NPA Committee of The South REPORTS

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Why Industry Moves South

NPA Committee of The South
REPORTS

Why Industry Moves SOUTH

A Study of Factors
Influencing the Recent Location
of Manufacturing Plants in the South

by

Glenn E. McLaughlin
Stefan Robock

Committee of the South
NATIONAL PLANNING ASSOCIATION

NPA COMMITTEE OF THE SOUTH

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Background

On November 21, 1946, NPA announced formation of a new Special Committee—The Committee of the South—made up of Southerners active in agriculture, education, finance, government, industry, labor, the press, and radio.

The creation of the Committee grew out of discussions by members of the NPA Board of Trustees and Standing Committees—the Agriculture, Business, and Labor Committees on National Policy and the Committee on International Policy. There was a consensus among these members that the development of the South is a matter of major national policy. They were convinced that:

The South still has a great reservoir of undeveloped resources, untapped markets, and manpower available for jobs in new industries and businesses.

The nation cannot attain its goals of continuing high-level employment and production with rising standards of living unless that reservoir is opened.

National policies and programs must provide a favorable environment if the South, along with other regions, is to achieve vigorous, rapid expansion.

The NPA members believed it important that plans be worked out to develop the South's full possibilities. They felt, however, that Southerners themselves are better equipped than others to look at the resources of their region, state their goals, and point out feasible action. At the same time they were convinced that plans for the South—like plans for the nation as a whole—would be more effective if they were made jointly by representatives of *all* economic groups in the area rather than by any special interest.

This thinking led to an invitation from the Board of Trustees to representative southern leaders to serve on the new NPA Committee of the South—an invitation accompanied by an assignment:

To pool their knowledge and work out specific, practical programs for the South, keyed to the interdependence of economic groups and geographic areas throughout the nation.

The late Senator J. Melville Broughton, Chairman of the NPA Committee of the South until his recent untimely death, opened the Committee's initial meeting at Birmingham with the statement: "The nation needs a strong and economically prosperous South. Only the South can give an adequate response to this challenge. Our Committee is a Committee of Southerners. It will attempt objectively and in a wholly nonpolitical and unemotional manner to conduct a study and survey that may at least point the way to better economic conditions throughout the South."

The Committee, it was agreed at that meeting, had no interest in simply adding additional volumes of statistics, charts, and vague observations to the long and largely unread list of studies of the South. Its general program is aimed at "practical suggestions for constructive action," in a growing southern economy.

Since that first meeting the Committee has met frequently; its subcommittees more frequently; and numerous individuals have worked on special assignments for the Committee. These efforts are culminating in reports which are being issued in the hope that they will be useful to individuals and organizations in day-to-day decisions which will affect the South's growth.

In keeping with NPA's general tradition, Committee members have given unstintingly of their time and experience in setting up goals, seeking out the facts, criticizing and advising on manuscripts—and they have expressed enthusiasm for their primary responsibility of working with other Southerners in putting practical plans into action. NPA is grateful for the continuous cooperation of Committee members.

From the start of the Committee's work we have been fortunate in having the services of Dr. Calvin B. Hoover, Head of the Department of Economics at Duke University, as Director of the Committee's Research, and the consulting services of Mr. William Davlin, Chief of the Area Development Division of the U. S. Department of Commerce.

Special thanks are due the authors of this report—Dr. Glenn McLaughlin, Chief Economist of the National Security Resources Board, and Dr. Stefan Robock, now with the Antitrust Division, U. S. Department of Justice, in Boston. Dr. McLaughlin and Dr. Robock worked together on industrial location studies for the National Resources Planning Board before the war. During the war Dr. McLaughlin was a member of the War Plant Site Board of the War Production Board, and has written extensively on location of industry. The authors, it should be noted, are solely responsible for the factual findings and conclusions in this book.

NPA and its members always will be indebted to the late Senator

Broughton, who as Chairman steered the Committee through its initial problems of organization and whose unflagging interest and valuable guidance have so vitally affected the Committee's operations to date. The Committee is now under the able guidance of Colonel E. W. Palmer, whose interest and leadership in southern development have been so clearly demonstrated by the active part he has played in the work of the Committee since its creation.

May 19, 1949

E. J. Coil

Director, NPA

The Committee's Statement

Members of the NPA Committee of the South believe that their region's economic growth and stability rest in very important part upon the growth of manufacturing industry. The South is basically an agricultural region. However, the strong shift of recent years toward food and livestock farming, coupled with the mechanization of cotton, means that fewer and fewer workers are needed on farms.

Many workers have already found off-the-farm employment in new and expanded factories and in the trade and service establishments which inevitably grow up around them. Many more will need to do so. For these reasons, as the Committee sees it, industrial growth is important not only for the production, employment, wages, and profits it creates directly. It is the strong right arm of the new southern agriculture. It provides jobs for workers no longer needed on farms, industrial processing for raw materials or diversified farming, and consumer markets for soil-saving food and livestock production.

In line with this thinking, the Committee sponsored its study of the major manufacturing facilities located in the South during the recent postwar period. The Committee has been impressed with the vast amount of effort and expense going into the southern industrial development movement. It has observed the vigorous efforts of railway and utility industrial agents, banks, insurance companies, chambers of commerce, state planning and development agencies, and other public and private groups. These organizations are in daily contact with industrial firms and have great familiarity with their needs. The Committee has felt that the industrial development work of such organizations and that of civic-minded Southerners generally would be materially aided through a detailed picture of the industrial location process as it has operated in a large number of actual cases, viewed from the eyes of company management.

Dr. McLaughlin and Dr. Robock were asked to determine the "actual factors which have influenced decisions on industrial location made by the management of companies which have built or considered building southern plants." They selected for detailed investigation 88 of the

plants recently located in the thirteen states of the South which are often considered as the "Cotton South"—Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, Oklahoma, South Carolina, Texas, Tennessee, and Virginia. The cases analyzed cover all major branches of manufacturing activity, and are generally representative of the widespread new industrial activity in the South. Large plants—many of them representing investments of over $10 million—as well as a few smaller key plants have been included in the study.

By analyzing the first-hand data secured from business executives with recent plant-location experience, the Committee believes that it has found some guides to an understanding of the behavior patterns of men in the business world who make plant-location decisions. Both businessmen and industrial development agencies will find useful and practical answers to many questions on which there has been only incomplete information to date. Among these questions are:

Just how does a large industrial firm go about the task of selecting a location?

Why have many firms sought locations in the South since the war?

Where several southern communities offered possibilities, how did the firm decide between them?

What has been the general, relative importance of markets, labor supply, raw materials, transportation? And what types of industry have been attracted by each of these factors?

Does one industry attract another, or others?

Do new southern plants find labor productive? Easily trained?

Are wage differentials important?

What has been the attitude toward unions?

Is weight given to such matters as schools, housing, community services and facilities, city and county finances, in making locational decisions?

Are tax concessions desired?

What types of information does a firm need when considering a community or area?

How can a community assist in supplying the information?

The geographical and industrial distribution of the cases studied, although not statistically representative, provide a sound basis for presenting several significant generalizations about the industrial development of the South as a region.

Many, if not most, businessmen neglect the business potentialities of plant location unless the problem is forcefully thrust upon them. For a going concern, this inertia can be explained by the lack of experience

with plant-location problems on the part of the executive personnel, and by the far-reaching personal and business readjustments which accompany a change in business location.

In a growing industry or an expanding economy, adjustments to the changing geography of business can be accomplished with little or no business pain through the proper location of new capacity. But even though the level of industrial operation remains stable or declines, the advantages of relocation cannot be overlooked or rejected by a concern if it is to survive. Industrial progress requires *locational* competition as well as technological competition. Our economy is highly dynamic in a geographical sense. To the extent that advantages of location are not realized, possible lower production costs cannot be passed on to the consumer in lower prices.

The method of work in the Committee of the South conforms with that of other NPA Committees. In all possible cases it is cooperating with appropriate southern institutions in making studies and putting programs into action. In the preparation of reports it is seeking the assistance of technical and professional personnel competent in their particular fields and experienced in the South and its particular problems.

This study was conducted under the guidance of the Industrial Subcommittee of the NPA Committee of the South, on which the following members serve:

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The Committee appreciates the research and analytical work done by Dr. McLaughlin and Dr. Robock. And it wishes to express special thanks to the officials of the corporations who cooperated in this study. Essentially, this is a study of the analyses such officials made in arriving at decisions to locate plants in the South. They gave generously of their

time in the lengthy interviews and correspondence necessary to the study, and they made their files of technical memoranda and materials available for the purpose. As a result, it is possible to present a report dealing directly with realities and largely free of theoretical speculation.

The Committee believes that individuals and organizations working to expand industry are making a contribution which has far-reaching implications in terms of higher income levels and general well-being. Out of higher incomes can come better living standards for the individual and the family, and more adequate public revenues for education and for health and welfare services.

The initial response to the Committee's pamphlet, *New Industry Comes to the South*, which presented some of the highlights of the analyses contained in this book, is gratifying. It clearly shows that not only are Southerners interested in their region's economic development, but that many other Americans share with them a recognition of the part the South can play in attaining goals of high employment and production with rising standards of living.

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NPA's Standing Committees—the Agriculture, Business, and Labor Committees on National Policy and the Committee on International Policy—and its Special Committees are assisted by the permanent research staff. Whatever their particular interests, members have in common a fact-finding and socially responsible attitude.

The results of NPA's work will not be a grand solution to all our ills. But the findings, and the process of the work itself, will provide programs for action, planned in the best traditions of a people's functioning democracy.

All reports published by NPA have been examined and authorized for publication under policies laid down by the Board of Trustees. Such action does not imply agreement by NPA Board or Committee members with all that is contained therein, unless such endorsement is stated.

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PART ONE

Background of the Problem

ONE

Introduction

SPEAKING to a group of Boston citizens early in the winter of 1889, Henry W. Grady, managing editor of the *Atlanta Constitution*, described the funeral of a poor "one-gallus" fellow he had attended some years before in Pickens County, Georgia. "They cut through the solid marble to make his grave," said Mr. Grady, "and yet a little tombstone they put above him was from Vermont. They buried him in the heart of a pine forest, and yet the pine coffin was imported from Cincinnati. They buried him within touch of an iron mine, and yet the nails in his coffin and the iron in the shovel that dug his grave were imported from Pittsburgh. They buried him by the side of the best sheep-grazing country on the earth and yet the wool in the coffin bands and the coffin bands themselves were brought from the North. They buried him in a New York coat and a Boston pair of shoes and a pair of breeches from Chicago and a shirt from Cincinnati. The South didn't furnish a thing on earth for that funeral but the corpse and the hole in the ground."

In his eloquent way, Henry Grady was dramatizing the fact that although the South was rich in natural resources it was poor in industry, and that the magic formula for creating productive activities within areas overflowing with natural wealth had eluded its people.

Even during the height of the cotton economy in the ante bellum era, periodic drives had been conducted by southern leaders to hasten the industrial development of that specialized area. Henry Grady, in his lifetime, contributed a sizable share of his tremendous energy toward that goal. Industrialization did get under way but utilized only in small measure the great resources of the South. In recent years, President Franklin Roosevelt focused still broader attention on "The Nation's Number One Problem" and stimulated national programs toward improving the economic welfare of that most undeveloped economic area in the United States.

But industrialization is not uniquely a problem of the South. Since the end of World War II, most of the economically undeveloped coun-

tries of the world have stirred and are complaining loudly in the spirit of Henry Grady. Not only are the city leaders of Birmingham, the state leaders of Arkansas, and the leaders of hundreds of other cities and states in the United States seeking new industry, but so are dozens of foreign countries, from Chile to Mexico and from South Africa to China. And one objective is foremost in the minds of all—to discover the secret of attracting and developing new industry in order to achieve the advantages of a highly industrialized economy.

Despite the intense local, national, and international interest in the problem of industrial location and the great practical importance of this subject to the plans and hopes of so many people in the world, the subject has received surprisingly little scientific attention over the years. Millions of dollars have been spent for industrial promotion advertising and for special inducement programs but practically no support has been given to research efforts aimed at understanding the basic principles involved in the selection of a location for industry. The most recent book for businessmen on the subject [1] was printed in 1930—almost 20 years ago—and has been out of print for many years. Only one major study of industrial location [2] has been undertaken in recent years by the Federal Government. And research in the academic fields has also been very limited. Fortunately, an excellent new analytical work [3] has appeared, which should encourage much needed scientific analysis of the subject.

After the close of World War II, the National Planning Association initiated a broad program of research on the economic problems of the South. The Committee of the South, which was formed to direct this activity, immediately realized that the knowledge available concerning industrial location and development was inadequate and decided to undertake its own basic research.

Previous studies of the general problem of industrial location and the specific problem of industrialization in the South have been primarily theoretical or statistical analyses of aggregate data. Detailed and first-hand information concerning actual business behavior was not available. Although a few persons had attempted to explain the location of industry by studying overall statistics, no one apparently had ever made an effort to find out directly from businessmen the ways in which certain factors influenced their selection of plant locations. Therefore, the Committee sponsored the present case study. By examining the actual factors which have influenced businessmen to locate new plants in the South,

[1] Holmes, W. Gerald, *Plant Location*. New York, McGraw-Hill, 1930.

[2] National Resources Planning Board, *Industrial Location and National Resources*, U. S. Government Printing Office, December, 1942.

[3] Hoover, Edgar M., *The Location of Economic Activity*. New York, McGraw-Hill, 1948.

the Committee hoped not only to throw light on the general principles influencing location, but also to arrive at a basis for evaluating the industrial development programs of both private and public agencies.

Although this study had its genesis in a desire to help the South, the general application of the results of this study to the problems of industrial location and economic development in all areas should be obvious to the reader. The basic factors underlying the decision to locate an automobile assembly plant or a cheese factory in the South are in most cases the same factors which govern the location of a similar plant anywhere. The availability of surplus labor, of natural resources, and of a market are just as necessary for manufacturing operations in Brazil or China as they are in the southern part of the United States. Thus, it should be emphasized that this study is not exclusively concerned with the industrial development problems of the South, but also with the process of industrial location in general. More specifically it attacks the broad problems of why businessmen locate plants where they do and what types of industries are attracted by the major economic factors in any area.

In the course of this study the officials of more than fifty important manufacturing concerns were interviewed. These firms were responsible for establishing 88 new plants in the South [1] since the close of World War II. Most of the larger companies which have developed new facilities in the South during that period cooperated in this survey. A complete list of plants which were studied is presented in Appendix A.

So many new plants were established in the South during the postwar period that only a portion of the total could be covered in this study. The method and the criteria used for selecting the cases to be studied are described in Appendix A. Locations in all the thirteen southern states have been included, and all of the major industry groups, except tobacco, are represented. Although some of the smaller plants were investigated, most of the plants studied involved investments of over $100,000, and many of them investments of over $10,000,000. A summary of the new plant locations included in this study, classified by industry group and by state, is shown in Table 1.

The personal interview method was utilized for this study on the assumption that businessmen would take time to talk about their plant lo-

[1] The South, for purposes of this study, includes thirteen states: Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, and Virginia. The House Agricultural Subcommittee on Cottoin has classified these same thirteen states as "The Cotton South." (See *Study of Agricultural and Economic Problems of the Cotton Belt*, Hearings before Special Subcommittee on Cotton of the Committee on Agriculture, July 7 and 8, 1947; also referred to as the *Pace Report*.)

Table 1. New Plant Locations Classified by State and Industry Group

Industry group	Total	Ala	Ark	Fla	Ga	Ky	La	Miss	NC	Okla	SC	Tenn	Texas	Va
1. Food	11	—	1	—	2	—	1	1	—	2	1	1	2	—
2. Tobacco	—	—	—	—	—	—	—	—	—	—	—	—	—	—
3. Textile	7	—	—	1	—	—	1	—	1	—	—	2	—	2
4. Apparel	5	1	—	—	1	—	—	2	—	1	—	—	—	—
5. Forest products	4	—	—	—	1	—	—	2	—	—	1	—	—	—
6. Furniture	1	—	—	—	—	—	—	1	—	—	—	—	—	—
7. Paper	8	1	—	3	2	—	—	—	2	—	—	—	—	—
8. Chemicals	15	—	—	1	3	—	—	2	2	—	1	1	3	2
9. Petroleum & Coal	2	—	—	—	—	—	2	—	—	—	—	—	—	—
10. Rubber	3	1	—	—	—	—	—	1	—	1	—	—	—	—
11. Leather	9	—	6	—	—	—	—	—	—	—	—	3	—	—
12. Stone, Glass, etc.	4	—	—	—	—	1	—	2	—	—	—	1	—	—
13. Iron & Steel	1	—	1	—	—	—	—	—	—	—	—	—	—	—
14. Nonferrous	1	1	—	—	—	—	—	—	—	—	—	—	—	—
15. Electrical equip.	9	—	1	—	—	2	—	1	3	—	—	1	1	—
16. Machinery	5	—	—	—	—	1	—	—	—	—	—	4	—	—
17. Trans. equip. (Incl. Automotive)	2	—	—	—	2	—	—	—	—	—	—	—	—	—
18. Miscellaneous	1	—	—	—	—	—	—	—	—	—	—	—	1	—
TOTAL	88	4	9	5	11	4	4	12	8	4	3	13	7	4

cation decisions but would not be likely to fill out a lengthy questionnaire. Furthermore, a personal interview permitted the businessman to emphasize the location considerations as that emphasis existed in his mind, rather than as suggested by the form of a questionnaire. In preparation for the field work, a detailed check list was developed in which an attempt was made to include all of the relevant points to be investigated in each interview (see Appendix B). The technique was to encourage the businessman to tell his story first in his own way and then to question him regarding any omitted items. About four months were spent in completing the field study. It is interesting to note that, although this was a study of the South, almost all of the interviewing was done in the North. The home offices of the companies responsible for most of the large-scale expansion in the South are in New York, Chicago, Boston, Detroit, St. Louis, the Philadelphia-Wilmington area, and the Cleveland-Akron area. The expansion into the South is thus largely a matter of establishment of branch plants of northern companies. Capital and management functions are centered in older industrial areas.

Some of the conclusions of this study are contrary to presently accepted notions. Many economists may be surprised by the simple theoretical pattern presented, and many laymen may find it hard to believe that anything but "cheap" labor was important in attracting industry to the South. Consequently, questions may be raised as to the reliability of the data and the representativeness of the cases covered.

In the authors' opinion, the information received from the cooperating business concerns is reliable. Most companies were anxious to discuss in detail their plant location experiences because they felt that they had done a good job. Others were completely frank in admitting their past errors and in pointing out the pitfalls in plant location decisions. The information was cross-checked in a number of ways. Many executives provided an analysis or criticisms of the location decisions of other companies. Conversations with the industrial development personnel of the railroads and of the state and local agencies also helped to evaluate the information received directly from the companies.

The policy on disclosure for the study was that none of the information received from the companies would be publicly attributed to them without their permission. As a result many statements in this study must remain anonymous. Thus it has been possible to secure valuable and helpful information otherwise not obtainable for a research project such as this.

Because overall data on the extent and characteristics of the postwar wave of industrial expansion in the South were not available when this study was made, it was impossible to select the cases in such a way that

they could be presented as a truly representative sample of the entire industrialization advance of the South. Nevertheless it is our belief that the cases are representative enough of the locational problems of the various industries which located in the South to permit the generalizations we have made about the relative importance of the major location factors in attracting industry to that area.

TWO

The South: Its Industrial Location and Development Characteristics

THE thirteen states of the South face many of the same economic problems which confront industrially under-developed areas throughout the world. Some of the more important features of the South's economic structure, both from the standpoint of industrial location and industrial development, are as follows:

1. The South became industrialized less rapidly than did the nation as a whole until the early part of this century.
2. Both agriculture and manufacturing in the South have been highly specialized.
3. The South possesses extensive and varied resources, both human and natural, which have been idle or under-utilized.
4. The South has been a low-income area and therefore has lacked the attraction of a market for many types of industries.
5. "Branch plants" rather than locally owned enterprises have dominated much of the manufacturing output of the South.
6. During World War II and the postwar period, industry in the South expanded greatly, became more diversified, and raised per capita incomes to new highs.

Industrialization Lag in the South

For much of its history, the South has depended primarily on agriculture, and especially on cotton. Prior to 1860, the business and industrial life of this region was almost wholly a supplement to the "plantation economy." And until the beginning of the twentieth century the South moved from agriculture toward business and industry less rapidly than did the nation as a whole. Since 1910 the industrialization trend, common to the nation, has been considerably more rapid in the South than

in the United States as a whole. Still the national norm has not been attained.

The dominance of agriculture and the industrialization lag in the South is graphically illustrated by the occupational distribution of the labor force. Even after the considerable expansion in manufacturing following World War I, agriculture in 1940 still accounted for 34 percent of the total working force in the South as compared to 19 percent for the nation as a whole. Manufacturing employed only 15 percent of the workers in the South whereas 23 percent of the workers in the United States were similarly engaged. Mining, construction, transportation, trade and services, as measured in this way, also lagged in the South behind the national norm.

In the ante bellum South, industrialization lagged, because on the whole agriculture represented the most profitable use of available resources. During the Reconstruction Era the South was economically poor. For many years the region possessed neither the capital, technical leadership, nor labor skills to develop manufacturing.

The need of nonagricultural development was clearly recognized in the South after the War between the States, and in the decade of the 1880's there were signs of industrial renaissance. Industries based upon the two most obvious resources, cotton and timber, were the vanguard of the new trend. By about 1910 the South's share of the nation's manufacturing began to increase and the trend has continued.

Specialization in the South's Economy

For many years, regional specialization has made the economic welfare of the South dependent upon the demand and price fluctuations for a single agricultural crop or a few types of industrial products. In agriculture the speciality of much of the South for many decades has been cotton and the prosperity or adversity of the South in the past has been closely tied to the economic position of cotton. In terms of industrial employment, textiles, lumber, and tobacco products have been of greatest importance. The textile industry—primarily cotton broad woven goods—in 1939 accounted for over 50 percent of all manufacturing workers in the seven states of the Southeast (Alabama, Florida, Georgia, Mississippi, North Carolina, South Carolina, Tennessee). In the same year, the lumber industry—confined largely to the cruder mill operations—engaged about one-sixth of the industrial workers in that group of states.

Agricultural and industrial specialization in the South not only resulted in economic instability but also in a relatively low level of economic welfare. The industries paid relatively low wages and employed largely low-skilled workers. Consequently, with 18 percent of the nation's manufacturing working force, the South's share of total manufacturing pay rolls in the United States was only 11 percent in 1940. The South, with about half of the nation's farm population and a third of its cropland, received in 1940 only a fourth of the total farm income.

In recent years, however, great progress has been made in the South toward diversification of both agriculture and industry and toward the development of greater income-producing activities in both fields. In agriculture, the increased importance of meat, milk, poultry products, fruit, and vegetables has been a recent phenomenon. In industry, the war and postwar period brought significant expansions in chemicals, farm equipment, tires, automobile assembly, electrical equipment, aluminum, and food products.

Idle Resources

The South has potentially the most rapidly growing labor force in the nation. The excess of births over deaths is higher than in any other region. Yet as a result of insufficient employment opportunities during the 1920–30 decade, the South supplied by migration an average of 130,000 persons a year to other regions of the country. During World War II, the annual rate of migration from the South increased to 300,000.

The mineral resources of the South constitute another important economic asset. Petroleum, natural gas, coal, stone, sulphur, sand and gravel, and iron ore are the most important of the minerals. Others are bauxite, phosphate rock, clay, lime, salt, and zinc. Some of these basic minerals are well developed but in most cases there is room for much more intensive utilization.

More than two-fifths of the South is forest land, 85 percent of which is capable of producing commercial timber. Under improved forest management the lumber output of this region could be substantially increased over present levels. Opportunities in pulp making appear to consist in more extensive use of hardwoods, presently largely untapped, through new processes or by increasing the ratio of hardwoods that can be used in making sulphate pulp.

In power development the South still has further opportunities for

expansion, even though rapid strides have been made in recent years by the Tennessee Valley Authority and private power producers. And not to be excluded is the greater potential agricultural output which can result from agricultural mechanization and a wider adoption of soil conservation and soil building practices.

Low Income—Small Market

Low incomes mean a small market demand by consumers. Despite gains in recent years the South still remains a comparatively low-income area. The low productivity in agriculture, predominance of low-wage industries, and the under-utilization of resources are the major elements responsible for the low level of income. Although the gap in per capita income between the South and the average for the United States has narrowed relatively since the pre-World War II period, none of the southern states had a per capita income in 1947 equal to the national average and most of them were far below. The per capita incomes for each of the southern states are shown in Table 2 for 1940 and 1947.

Table 2. Per Capita Income Payments by States, 1940 and 1947

State	*1940*	*1947*	*Percent Increase 1940 to 1947*
Alabama	$268	$ 837	212
Arkansas	252	710	182
Florida	471	1,104	134
Georgia	315	885	181
Kentucky	308	850	176
Louisiana	357	892	150
Mississippi	202	659	226
North Carolina	316	890	152
Oklahoma	356	1,053	161
South Carolina	286	778	172
Tennessee	317	916	189
Texas	413	1,128	173
Virginia	450	1,064	136
Continental U. S.	575	1,323	130

Source: "State Income Payments in 1947," *Survey of Current Business*, August 1948, Tables 5 and 7, also map.

The problem of the South is well illustrated by the comparison of its per capita income to that of the nation and it is encouraging that this relative disparity has been narrowed.

The Pace Report lists and discusses the following forces as the causes of low incomes and living standards in the Cotton South.

1. Low productivity of manpower in southern agriculture.
2. The exceptionally high rate of natural increase of the southern farm population.
3. The past and continuing high rate of soil erosion and soil depletion.
4. Lack of capital.
5. Educational deficiencies.
6. Health deficiencies.
7. Lack of skills for nonfarm pursuits.
8. The South's infant industry status.
9. Inadequate local market demands.
10. Adjustments required by increased rate of farm mechanization.

This last factor—farm mechanization—a new problem of spectacular proportions threatens temporarily at least, to cut into total income payments. Revolutionary new tools such as the mechanical cotton picker, the flame weeder, improved tractors, and other less important labor-saving equipment will greatly increase the productivity of workers in southern agriculture. Consequently, the number of farm workers required may be reduced by an estimated 2,000,000 persons by 1965. Although these labor-saving devices will eventually benefit the South, the immediate future is likely to be concerned with the need for new job opportunities. The natural tendency is to look to new industry as a means of absorbing the displaced farm labor. It is therefore understandable that such great emphasis has been placed on a program to industrialize the South. And with the weaknesses of the South's industrial structure in mind, southern leaders are seeking means of stimulating not only more industry but "better" industry—industry that will use complex skills, pay higher wages, and increase other incomes, in addition to diversifying the industrial structure.

Branch Plants

Much of the more recent industrial development of the South has been both directed and financed from outside the region, through the establishment of branch plants of national manufacturing concerns. The extent of "foreign" control of southern industry is suggested by some 1939 statistics for the seven states of the Southeast. Nationally, 18.5 percent of all manufacturing establishments were branch plants and they produced about 65 percent of the total value of manufactured products. In the southeastern region, 27.2 percent of all establishments were

branch plants which produced almost 70.5 percent of the region's total value of products. This dominance of branch plants also undoubtedly applies to new facilities constructed since 1939 although no exact measure is yet at hand.

The presence of these branch plants in the regional manufacturing structure has major implications for industrial development. The headquarters of the parent concerns from which the major policies of the southern branch plants are directed are in New York, Chicago, Detroit, and other management centers. The large concerns of the North had the necessary capital, skills, and marketing outlets to sponsor manufacturing in the South. Because these outside companies have been the source of much industrial expansion in the past, there is still a proclivity on the part of southern promoters to devote a lot of their energy toward inducing outside companies to build new plants in the South. This is not necessarily inconsistent with aiding local entrepreneurs in the financing and establishment of new "home" manufacturing enterprises, but some states have emphasized these local ventures more than others.

It may be that the general economic health of the South would be improved if local representation on boards of directors of concerns with local branch plants were required. Some such effort to represent the interests of the area may be of advantage to both the company and the area.

New Postwar Industrial Expansion

A new wave of industrial expansion swept the entire nation after World War II. Stimulation came from the demand postponed during the war and also from the great new demand accompanying the high peacetime level of economic activity. Total demand has been so great for most products that both new expansions and old plant facilities have been required. This has had special significance in the South, for a new industrial region can attract a "new" plant when the total capacity in an industry is expanding without displacing, at least for the time being, an existing plant elsewhere.

Since the war the importance of the South has increased in nearly every major industry group. In terms of total wages and salaries paid the increase in the share of the South from 1940 to 1946 is shown in Table 3.

Several significant geographic shifts are indicated by the state figures. Some shifts accentuated the importance of established forms of produc-

tion. For example, in textile mill products there was further concentration in the Southeast, mainly in Georgia and South Carolina, and a relative decline in the Northeast, especially in Pennsylvania. In lumber manufacturing, there was a notable shift in relative importance of lumber production from the Far West to the Southeast. Evidences of the development of new production centers in the South were the shifts in relative importance of paper production to the deep South at the expense of New England, gains in chemicals in Tennessee and Texas with relative decreases in several northern states, expansion of food processing

TABLE 3. WAGES AND SALARIES IN SPECIFIED MANUFACTURING INDUSTRIES IN THE SOUTH AS A PERCENT OF THE TOTAL FOR THE UNITED STATES, 1940 AND 1946

	1940	*1946*
Tobacco manufacturers	53.41	57.94
Textile mill products	36.18	39.94
Lumber and timber basic products	33.50	37.15
Products of petroleum and coal	29.00	30.66
Furniture and finished lumber products	19.48	21.03
Chemicals and allied products	15.32	19.82
Food and kindred products	13.15	15.25
Paper and allied products	11.77	14.21
Stone, clay and glass products	10.37	10.81
Printing, publishing and allied industries	8.73	8.64
Apparel and other finished textile products	7.00	8.20
Nonferrous metals and their products	4.85	6.79
Transportation equipment including autos	3.84	6.64
Rubber products	3.41	6.21
Leather and leather products	4.68	5.80
Iron and steel and their products	5.37	5.66
Machinery (Except electrical)	3.59	3.86
Miscellaneous manufacturing industries	2.33	2.45
Electrical machinery	.86	1.13

in the South and Far West in contrast to relative declines in certain eastern states, and the new southern plants for several nonferrous metal products and for rubber tires.

The above figures, however, include only a part of the large-scale postwar expansion, because the bulk of the new plants were just coming into full production at the end of 1948. Although census data are not yet available there are indications that the South has expanded at a faster rate than the rest of the country throughout the postwar period. For example, a tabulation by a private development agency (Territorial Information Department, Chicago, Illinois, *Survey of Industrial Expansion*, September, 1948), shows that the 13 states of the South accounted for 35 percent of the national total of $1.9 billion for manufacturing buildings contracted for since the war—specifically for the three years from July, 1945 through June, 1948. Texas made up roughly 40 percent

of the southern total. This study was based on contracts awarded, valued at $100,000 or more, for manufacturing plants or additions as reported by the *Engineering News-Record*. Although final costs often exceed contract figures, and the smaller plants have been excluded by the $100,000 lower limit, the proportion indicated by the study is probably a reasonably good indicator of the geographic pattern of the postwar industrial expansion.

The South appears to be attracting the types of industry which will contribute further toward diversification and internal balance of its industrial structure and toward raising incomes to the national level. Since the end of World War II, high-wage industries like automobile assembly, agricultural implements, other machinery, chemicals, and rubber tires have been attracted by the South as a market. The materials of the South have attracted many new pulp and paper plants and producers of food products; low cost power and natural gas have drawn copper tubing and electric lamp factories; and the petroleum resources have attracted refineries and other chemical facilities. In the recent expansion, labor has been the least important of the three major location factors, as will be pointed out below, but it has been responsible for several significant new machinery plants in addition to a host of new textile and apparel factories. Most of the industries mentioned are new to the South or existed only as small segments of the economy before the war. The bulk of the new industries will bring higher wage scales to the South.

What is the significance of this wave of industrial expansion in the South? Job opportunities are being created for part of the present surplus labor force, and more opportunities doubtless will be created for the workers to be displaced by the mechanization of agriculture. Moreover, the higher wages of the new industries will help to raise the general income level. In this respect and in others, industrial development is a dynamic process. New industries tend to make use of local sources of materials and help to develop the area. As the southern workers acquire new skills they are more likely to attract industries requiring skilled personnel. And, of course, the increased income will continue to attract new market oriented industries.

THREE

Business Objectives of Plant Location

THE businessman chooses the locations for industrial facilities in order to obtain low costs, a high sales volume, or both. Consequently, anyone hoping to understand or influence the geographical distribution of manufacturing plants must become familiar with the specific objectives underlying this type of business decision.

The first step in understanding this field of business behavior is to analyze the ways in which the selection of a plant location arises as a business problem. The next step is to examine the business advantages which result from selecting good locations, and within this framework to understand how a businessman determines the specific advantages to be achieved in locating a plant to make a particular product. For a specific location problem certain of the general factors are of compelling importance in the selection of a favorable location zone, whereas others are of only minor influence. These other general factors and the many other secondary considerations enter into the determination of the particular site. Finally, it is useful to arrive at a convenient and practical method for classifying the location problems of the many different types of industrial operations according to the major factors involved. Although they may appear to vary widely in location characteristics, most plants fall into one of three general groups on the basis of the principal advantage of location for the particular plant. These three groups suggested by our analysis of the many actual cases, are (1) market oriented; (2) material oriented; and (3) labor oriented.[1]

[1] In analyzing the large amount of case material made available to us, the authors found little guidance on this classification problem in the previously published studies of industrial location. Because of the large number of considerations which may be involved *theoretically* in each location decision, and because these considerations vary greatly in importance among the different types of manufacturing, previous studies generally inferred that it was impossible to do other than consider each location decision as separate and distinct from any other. But with 88 different location decisions to present, we were forced to search for a relatively simple general pattern of business behavior. This pattern, which conveniently emerged from the data, not only became our basis for classifying and discussing the case material but also seemed to provide a practical tool for analyzing location problems from either the businessman's or development agency's point of view.

Plant Location as a Business Problem

In the main, plant location decisions are made infrequently by the average businessman. He may make numerous price, wage, or sales decisions in the ordinary course of his duties, but be called upon to locate a plant only once in a lifetime. Plant location as a business problem generally arises as: (a) a part of a plan for a completely new enterprise; (b) a means of improving or saving an existing plant by relocation; or (c) an expansion of a going concern through adding an additional plant.

1. *New Enterprise*

The simplest situation in many respects occurs when a completely new enterprise is being started. Yet in such cases, securing finances, assembling a completely new manufacturing and sales organization, or arranging for sources of supply may overshadow the problem of where the business should be located. Furthermore, if the new enterprise begins in a small way, which is usually the case, the entrepreneurs may not have the resources to survey a large number of potential locations and select the most advantageous one. In fact, they may give no thought at all to possible alternative locations.

Only two of the eighty-eight new plant locations we selected for study, by the method and criteria set out in Appendix A, were completely new enterprises. Although this small proportion of new enterprises may be accounted for in part by the exclusion from our study of most plants involving less than the relatively small investment of $100,000, a re-examination of several more extensive lists of new postwar plants in the South confirmed the impression that comparatively few new manufacturing enterprises were started in the South during the postwar period.

The fields entered by new enterprises were primarily food processing, hosiery, apparel, and furniture. Probably the largest completely new postwar enterprise in the South was the Coosa River Newsprint Company, a $10,000,000 plant which was sponsored and financed by southern newspaper publishers who acquired a government-owned ordnance plant at Childersburg, Alabama.

2. *Relocations*

A company having a reasonable degree of business success is unlikely to disrupt its operations to move its plant. But when shortages of labor

or accessible materials occur or when a competitor has capitalized on some hitherto unrealized location advantage, a company may be forced into relocating its plant.

Yet the transfer of an entire plant "lock-stock-and-barrel" from one location to another is a rare, though dramatic, event. Despite the popular illusion that the South is being industrialized simply at the expense of New England or other areas, relocations have made a relatively minor contribution to the postwar wave of industrialization in the South.

Only three of the plants covered in the study were relocations. The Clark Thread Company, one of the largest thread manufacturers in the country, abandoned a plant in Newark, New Jersey, and completed a fifteen-year program of shifting the company's entire operations to the South. A tight labor market and high labor costs in the Newark area were the reasons given by the company for the move. The other two cases of plant relocation—Boyle-Midway, Inc. at Chamblee, Georgia, and American Lumber and Treating Company at Florence, South Carolina—were not clear examples of relocation because they involved an expansion in total capacity and a shift in markets.

The postwar high level of prosperity justified using all available capacity in most industries, no matter how uneconomically located. But even in less prosperous times, shifting the location of an existing plant has not been a widespread practice. Moving a plant entails a possible sacrifice of some of the investment in the old site and building, a costly interruption of operations, the loss of old employees and the additional expense of training new workers, and many other expenses. The advantages of a new location must be outstanding to induce such a move.

3. *Branch Plants*

The most important reason for locating plants in the South during the postwar period was the desire of existing concerns to expand their overall productive capacity by building a new branch plant. An environment of full employment and a swollen demand for most products explains why 83 of the 88 plants included in this study were newly constructed branch plants of already well established concerns.

The decision to build a new plant and to establish it at a new location arose in one or more of the following business situations in the cases investigated:

1. The old plant had already achieved it optimum size and a completely new plant would permit greater efficiency and lower costs per unit of output.
2. Economies of product specialization could be realized. Where several

different products were produced in the same plant, it was often advantageous to establish individual plants for the several products when increased demand justified expansion.

3. Greater capacity was needed but newer technologies could not be integrated with the industrial methods and machinery of the old plant. For example, the newer single-story plant layouts in the tire industry could not be added to the old multi-storied plants.
4. Supplies of materials, labor, and space were inadequate in existing locations to support increased productive facilities.
5. Demand in an area being supplied by a distant plant had increased sufficiently to support an economic sized plant.
6. The risk of complete stoppage of company operations due to labor difficulties, shortages of materials, or hazards of weather could be minimized by increasing the number of plants and by geographically separating them when expansion was warranted.
7. The advantages of a rapid increase in production dictated a preference for acquiring idle plant facilities already available rather than constructing an addition to an old plant.

Location Advantages

When confronted by the location problem, the experienced businessman is likely to undertake two lines of inquiry. First, he will review the business advantages which vary with the location. Secondly, he will apply this general knowledge to his specific problem in order to estimate variations in projected business performance at various locations.

In actual practice, businessmen may skip the first step and seek a direct approach to the second. In fact, most businessmen emphasized the simplicity of their problem. For a broader understanding of plant location, it should be helpful to analyze the background information which many businessmen take for granted.

1. *Types of Location Advantages*

The major economic advantages to be achieved by wise location decisions are: securing immobile factors, reducing transportation costs, lowering production costs, increasing the supply of raw materials, increasing the demand for the product, and benefiting from the economies of decentralization or centralization.

In addition to these major advantages, which play a special and dom-

inant role in business location decisions, there are a multitude of less important location considerations. Some of the secondary factors most frequently mentioned by businessmen are: transport services, available buildings and sites, taxes, state and local influences, living conditions, climate, and proximity to capital and management personnel.

1) SECURING IMMOBILE FACTORS—One natural business problem arises from the fact that most materials are available in the desired quantity only in certain areas. Minerals, for example, are highly localized and even agricultural materials are confined to a few definite regions.

If the materials can be freely transported, the main consideration in location may be minimizing transport costs. However, if they are not easily transported to the plant and if they are sufficiently important, they are likely to determine the plant location. This type of situation arises because certain essential factors are comparatively immobile, usually because of great reduction in weight or volume or because of perishability.

As a rule, low-grade ore cannot be moved any great distance from the mine. Water, used in large quantities in the industrial process, is in effect an immobile material. Many chemical plants requiring water for industrial process or cooling purposes, must locate near a satisfactory water supply.

Plants dependent on low-cost electric power or low-cost natural gas have in the main the same kind of locational problem. Over a period of time and at great expense these energy sources can be transported to new areas. Practically speaking, however, plants for which these forms of energy are of dominant importance will, because of transmission costs, most advantageously be placed close to such sources of supply, as the gas fields of the Southwest or the low-cost TVA power area.

Still other materials have limited mobility because they are perishable. Raw milk, despite rapid strides in refrigeration techniques, is highly perishable. Plants such as cheese factories requiring large milk supplies must be located close to dairying regions.

2) TRANSPORT SAVINGS—Savings in transportation costs are usually an important objective in plant location if the required materials are either transportable or available generally, and if the demand for the product is independent of the location of the producing plant. Lower cost of materials at a distant source of supply is sometimes substantial enough to outweigh greater transport costs to the market. Likewise lower transport costs may sometimes make a costlier but closer source of materials more desirable for supplying a given market. Assuming, however, that the cost of materials at alternate sources is the same, utilization of the source of materials nearest to the market will usually result in transport cost savings.

Weight loss in processing is a characteristic of many types of manufacturing. Transport savings result when plants are located near the source of materials, and a minimum amount of transport cost is expended for moving materials which do not go into the finished product. In other words, it is less expensive to transport the finished products than the equivalent in materials.

Although most industries are dependent upon one dominant material in their selection of a location, there are a few industries which combine several transportable and important raw materials into a single commodity. The production of pig iron, which requires large quantities of coal, limestone, and iron ore and uses about three tons of raw material for one ton of pig, illustrates the multi-material type of plant. Usually the materials are widely separated. Then the problem is presented of locating either at the source of one of the materials or at an assembly point between the scattered sources and the market. Where the market is located within the area enclosing the raw materials, the best assembly point for minimizing total transport costs is likely to be chosen.

In a few cases the processing may be "weight-gaining." This occurs when some of the ingredients of the finished product are freely available in the area of the market. In such instances, it is more economical to add these "ubiquitous" materials at the market and thus keep at a minimum the transport expenses on this portion of the weight of the finished product. An example of a weight-gaining industry is the manufacture of sulphuric acid. Powdered sulphur, the major raw material, is moved to a point near the market and made into sulphuric acid by the addition of locally available oxygen and water. Steel-making involves a similar location problem when scrap metal constitutes a substantial part of the weight of the finished product because of its availability in large quantities at the market.

Another method of reducing transport costs is by adjusting to customary freight rate differentials. As a rule the rates on finished products are higher than those on raw materials. But this adjustment, of course, depends on the relative volumes of raw materials and finished products which have to be moved.

Thus, the major ways in which transport savings may be achieved in selecting a location include utilizing the source of materials nearest to the market, minimizing the transportation of both waste and ubiquitous materials, and taking advantage of transport rate differentials.

3) LOWER LABOR COSTS—Probably the best known advantage of location is savings in labor costs. These costs, of course, are not simply a matter of wage rates but depend also upon worker efficiency, labor turnover, and freedom from labor disturbances.

Geographical variations in labor costs among regions and between urban and rural areas have been explained by such factors as: the relative immobility of workers, regional variations in population growth and in the expansion of job opportunities, and degree of unionization. Possible savings in labor costs may influence plant location where transport costs are an unimportant part of total costs and where labor costs assume a more important role.

The shoe industry is an excellent example of the influence of geographical variations in labor costs on location. Since the value of the finished product is high in relation to its weight, transportation costs are a small part of the delivered cost of a pair of shoes. On the other hand, because of the requirements of the manufacturing process, labor costs are an important production cost. As a result lower labor costs have made the South and rural areas in general more attractive for shoe plants than urban areas and the Northeast. The shift in the textile industry is another example of the locational advantage of lower labor costs.

Before the war wage differentials were largely emphasized as the reason for lower labor costs. In the postwar period, the basis for labor cost savings has more frequently been explained as the continuity of operations permitted by a large and satisfactory supply of labor.

4) INCREASING THE SUPPLY OF MATERIALS—Businessmen state that the choice of a plant location may influence the size of the purchasable material supply. This consideration is especially important where materials are in short supply or, as in the case of agricultural products, the materials have to be produced.

The meat packers, for example, have explained that they are able to increase their purchases in the cattle raising areas by establishing local plants. Manufacturers of dairy products also state that by placing plants in an area they can not only increase their purchases of the available milk in that area but also stimulate an overall increase in milk production.

5) INCREASING THE DEMAND FOR THE FINISHED PRODUCT—The demand for a plant's output may often be influenced greatly by the location of the plant. This advantage of location was pointed out by producers of paint, household chemicals, and other products.

The basis for this advantage was explained by one manufacturer in terms of regional loyalty. He found a preference in the South for southern-made products. Other explanations have been in terms of better factory service to regional buyers.

Certain products may require factory service or overhaul from time to time. The closest producers of these items can best provide this neces-

sary service. A large manufacturer of heavy electrical equipment which requires periodical factory reconditioning located a new plant in the Southwest in order to secure a larger share of the business in that area.

DECENTRALIZATION VS. CENTRALIZATION—Decentralization is often favored as a means of getting closer to various segments of the market and of avoiding risks of concentration. Proximity to markets is favored for reasons already discussed. The risks of concentration mentioned by businessmen were labor stoppages, local tax laws, railroad strikes, fires, floods, and storms. On the other hand, centralization of plants may permit joint use of services and specialized facilities required by all the units in an industry. This makes it unnecessary for each producer to provide himself with all these services and facilities. The shoe industry is a well-known example of the kinds of specialization that develop in an area where an industry is concentrated.

2. *Location Advantages in a Specific Industry*

The importance of careful location selection to the success of an enterprise varies greatly among the many types of industrial operations. In some instances the extra costs and business obstacles resulting from a poor location decision may be so severe as to make the successful operation of a plant an impossibility. At the other extreme, some types of plants have relatively little to gain from a perfect location. The case material at hand covering a wide range of plant types indicates, however, that location economies or diseconomies are generally of substantial magnitude.

As a business decision, the location problem becomes a matter of relating the potential business advantages of wise location to the characteristics of the type of operation undertaken. Each businessman must ascertain which specific location factors are important for his particular type of plant. And because all of the location advantages important for a specific type of plant are generally not available in any one location, he must rank the location factors in the order of their importance. In this way, as a practical approach to the problem, the businessman can seek a location on the basis of the most important advantage and then make secondary adjustments, where necessary, in order to satisfy the minimum needs for the other factors.

Deciding which location advantages are most important in a given situation may appear to be a difficult problem. In practice, however, most businessmen find that their familiarity with the industry makes the answer clear. Without any intricate analysis, the shoe manufacturer knows that savings in labor costs are the most important locational

advantage for his industry; the automobile producer establishing an assembly plant is immediately aware of the dominant locational importance of transport savings on the finished product; and the pulp and paper manufacturer recognizes that proximity to a source of raw materials as a means of reducing transport costs is crucial to his location problem.

A Method of Classifying Plant Location Decisions

After deciding what to look for, the businessman, as an ideal solution, would make cost estimates for a number of alternative locations before making his choice. But in order to simplify his problem, by eliminating the many obviously unattractive possibilities, the businessman almost invariably follows the practice of selecting a location in two steps. First, he selects a general area on the basis of the most important advantage of location for his type of manufacturing. Secondly, he chooses a specific location within the general area. The cases considered in this study indicate that the major advantage is almost invariably achieved by locating close to either the market, a source of materials, or a supply of labor.

By selecting a satisfactory location zone on the basis of the most important location advantage, the businessman does not completely disregard all other factors. Instead, he simplifies his decision by assuming that if he selects the general area in accordance with the biggest single advantage for his type of plant, he will include specific locations which will satisfy the other essential requirements for the plant.

In accordance with this business practice, it is useful to classify the different types of industrial operations according to the factor that underlies the choice of a general area. This classification of plants, which was the basis for grouping the cases of plant location covered by this study, is as follows:

1. *Market Oriented Plants*

   a. Where finished products are perishable or not freely transportable.
   b. Where transport costs are an important part of total delivered costs and the finished product is more expensive to carry than the materials required.
   c. Where service, convenience to the customer, or regional loyalty is involved in achieving the desired level of sales.

2. *Material Oriented Plants*

   a. Where the necessary materials are perishable or not freely transportable.
   b. Where transport costs are an important part of total delivered costs and the materials are more expensive to carry than the finished product.
   c. Where it is important to increase the supply of materials.

3. *Labor Oriented Plants*

   a. Where transport costs are an insignificant part of the delivered cost of the finished product and geographical differentials in labor costs exist.
   b. Where wages constitute a high percentage of production costs and where the necessary labor supply is available only in particular areas.

Importance of the Major Location Factors and Size of Plant

According to the plant location cases covered by this study, the rising importance of the South as a market for industrial and consumer goods has been the major factor in attracting industry in the postwar period. Materials and energy resources ranked second. And labor, primarily in terms of availability, was third.

Of the total number of new plants included in this study, 45 per cent were primarily oriented to their market. Material and labor oriented plants totaled 30 percent and 25 percent respectively.

Among these three groups there were important differences in size of plant and in potential income-creating power. The largest labor oriented plant was estimated to cost $2,500,000 and less than one-third of the labor group of plants was above the million dollar mark. On the other hand, about two-thirds of both market oriented and material oriented plants cost in excess of $1,000,000 and a large number required investments in excess of $10,000,000.

The market oriented plants assume a still greater significance than their comparative number when viewed in terms of new direct employment. Whereas no manufacturing unit of the labor oriented group is estimated to employ over 1,000 workers, 25 percent of the market oriented and 15 percent of the material oriented units are to employ in excess of this number. Some of the market oriented plants with large work forces are: International Harvester at Memphis—about 4,000,

General Motors at Atlanta—2,500, Ford at Atlanta—1,800, Celanese at Rock Hill, South Carolina—5,000, and Curtiss Candy Company at Dallas —1,200. (Again note that the study has not included any of the large group of comparatively small market oriented plants which supply food products and other goods to local communities.)

The smaller size of the labor oriented plants in terms of investment and labor force is understandable. Where labor costs are the principal costs, it is usually because the technology of the industry is not characterized by large units of labor-saving machinery. In a shoe factory, for example, the machinery used is in small units and the limiting factor on the plant's optimum size is generally the number of workers that a company thinks can be supervised efficiently. Among the different labor oriented plants studied, the optimum size of the labor force ranged between 400 and 600 employees. Because transport costs usually are not of primary importance in labor oriented plants, it is possible to establish a new plant, when the number of employees outgrows the desirable size, and to locate it some distance from the old plant without increasing total costs significantly.

A material oriented plant often requires a large investment per worker because of a higher degree of mechanization. In some quarters, it has been noted that a labor force beyond the optimum size might require the most efficient unit in terms of equipment for effective supervision. In this survey, however, most of the material oriented plants appeared to employ less than the optimum working force, because of the high degree of mechanization or because of restrictions on the supply of materials.

The size of the market oriented plants is usually determined by the magnitude of the demand within the area to be supplied. Although the size of plant dictated by demand may require more or less than the optimum number of workers, the transport cost savings and other advantages resulting from being near to the market may again far outweigh any diseconomies arising from not employing the optimum size working force.

The comparative importance of each of the major location factors—markets, materials, labor—in the recent industrial growth of the South and the size of plant associated with each of these factors have a direct bearing on the activities of public and private development agencies in that region. In the examples of location of branch plants of large concerns selected for this study, market influences were outstanding, and a review of the smaller, locally developed plants indicates a similar emphasis. Moreover, among the facilities analyzed the average unit was much larger for market and material oriented plants than for labor

oriented plants. As subsequent chapters will indicate, efforts to provide additional employment in the South should not be based mainly on attracting those producers whose location decisions turn on labor costs or availability of labor, but rather on interesting those producers whose primary needs lie in obtaining markets and materials. Far more employment and higher incomes stem from the industries based primarily on markets and materials. To arrive at a balanced development of southern resources, all location factors should receive full consideration.

PART TWO

The Factors of Location and the South

FOUR

The Southern Market

FOR many industries, a growing regional market will attract new manufacturing plants. In fact, the extraordinary growth of the South as a market, the proximity of many southern locations to the major northern markets, and the availability of many seaports with access to export markets are outstanding factors in recent southern industrial development.

Several of these market oriented plants are discussed in this chapter as illustrations of the ways in which the market acts as the primary location factor. These examples are from the following industries: automobiles, chemicals, electrical equipment, food products, forest products, iron and steel products, leather products, machinery, paper products, rubber products, stone and glass products, and textile mill products. Of course, market considerations usually operate as a secondary factor in the location of material and labor oriented plants in that they influence the selection of a specific location within an acceptable area.

Market as a Location Factor

1. *General Importance of the Market*

Every new plant is based upon an immediate or potential market. The market under consideration may be geographically concentrated within a small area or spread over a wide area. It may be local, regional, national, or international in scope. For example, a manufacturer of fountain pens may have one plant for supplying the world market, whereas a producer of automobiles may have many plants in different locations within the United States and in foreign countries. The markets may be industrial users, such as hosiery mills which buy nylon yarn, or ultimate consumers, such as purchasers of candy. For each particular

plant the anticipated market is to some extent delimited by the location of similar plants of competitors and of the concern itself. To understand each plant location problem, the geographical market area which the plant intends to serve must first be clearly understood.

2. *The Market as a Primary Location Factor*

As already noted, the market is the primary location factor for many plants. Generally speaking, these plants are oriented to the market in order to minimize transport costs, in order to secure an increased share of the business, or because the finished products are perishable. Important savings in transport costs result from locating near the market whenever these costs are a significant part of the delivered-to-the-customer cost of the product and whenever it is more expensive to transport the finished product than the raw materials. A notable example of getting near the market to cut moving costs is the location of a du Pont sulphuric acid plant at Richmond, Virginia, mainly to supply company requirements in that general area. The manufacture of sulphuric acid is a "weight-gaining" process where a generally available material like water is added at the manufacturing site to an incoming material, sulphur.

GROWTH OF THE SOUTHERN MARKET—The major force attracting plants to the South in recent years has been the growing volume of expenditures of both final consumers and industry. As the market becomes large enough to support an economic sized plant, a new plant can be established to capitalize on the advantage of nearness to the market.[1]

The purchasing power of consumers increased during the war at a faster rate in the South than in other parts of the United States. Income payments in the South rose 187 percent from 1940 to 1947, while the whole country was gaining 150 percent. Although per capita income in the South is still below the national average, improvements in land use and intensive industrial development give some evidence that the favorable trend in the South is likely to continue.

The number of consumers in the South has also been increasing at a faster rate than the number for the United States, even after allowing for migration. The net reproduction rate in the South has exceeded that of the rest of the United States for some years. For the period, 1942–1947, the rate for the South was 1.447 as compared to 1.292 for the country. (A net rate of 1.000 means that each generation would just

[1] Where lower delivered costs can be achieved by locating at the market, as described above, these savings may not be passed on to the customer. If the total demand within an area cannot be completely supplied by local producers, the prices on all sales probably will be determined by the outside source of supply.

replace itself.) Moreover, the rise in incomes has modified the market estimates of the number of potential consumers for some products. One concern indicated that it now includes Negroes in its market estimates, whereas before the War they were not considered because of their low purchasing power.

The present and past industrial expansion occurring in the South, as a result of both regional and national demand, has led naturally to the establishment of dependent industries supplying parts and materials for manufacturing and for services. For example, the location of the large Celanese plant at Rock Hill, South Carolina, was primarily influenced by the needs of the nearby, large and growing textile industry of the Carolinas.

Another important influence in the postwar picture has been the technological development of specialized farm machinery for the southern market. The mechanical cotton picker and the small farm tractor are two new products which are now going into production in plants located within the South and oriented to the southern market.

MARKETS NEAR THE SOUTH—Although most of the new market oriented plants in the South were located to reach a southern market, several others were intended to supply also the regions bordering on the South. For example, the new lamp factories located in Kentucky and Arkansas produce mainly for nearby northern and western markets. In addition, many of the labor oriented plants were located in the northern part of the South in order to be within satisfactory delivery time to northern markets.

Some plants have been located in the South, partly because of access to foreign markets. The South has a number of ports, and whenever a considerable proportion of the production is to be shipped to foreign markets, shipping arrangements influence the location decision. Although only one or two of the plants investigated were predominantly concerned with producing for an export market, several of the companies had export shipments, either actual or potential, in mind in selecting specific locations. The Corn Products Refining Company, which will use the sorghum grain (milo maize) produced in the south Texas coastal area, located its new large plant at Corpus Christi partly because a large share of the output of the plant will go abroad.

3. *The Market as a Secondary Location Factor*

Where a plant is oriented to materials or labor, the location of the market will often provide the means for deciding upon one of several possible sources of supply. The production of phosphorus illustrates

the situation with respect to a material oriented plant. A phosphorus plant requires from 10 to 15 tons of rock for each ton of phosphorus produced and is therefore located close to the source of materials in order to save transport costs. There are three known sources of materials in the United States—Florida, Tennessee, and the Northwest. Since they are closer to major markets, the Florida and Tennessee reserves have been much more highly developed.

The possibility of giving better service to the customers has often influenced the choice between several possible sources of labor available for a labor oriented plant when transportation cost was only a small segment of total cost. One textile company, for example, had a choice of several areas in the South where their labor needs could be satisfactorily fulfilled. Since New York City is the principal market for the company's products, the desire to be within twenty-four hour shipping time of the market eliminated the states in the deep South as possible locations. The area selected was in Virginia.

Classification of Market Oriented Plants

The new plants which have been classified as market oriented can be divided into two groups: (1) consumer market oriented and (2) industrial market oriented. The products covered by this survey are listed below in the order in which they will be discussed. It should be noted that the classification by industry groups and sub-groups has no necessary relation to the locational characteristics of a plant. Plants within the same broad industry group may differ greatly in type of operation and in productive process with the result that their location is influenced by different primary factors. For example, within the leather category, shoe plants are oriented to labor and a sole cutting plant to its market. Similarly, a pulp and paper plant is oriented to raw materials and a paper box plant to its market.

	Industry Group	*Product*
1. *Consumer Market Oriented*		
	Automobiles	Automobile assembly
	Chemicals	Drugs and medicine
		Household chemicals
	Electrical supplies	Batteries
		Lamps

Food	Candy
	Dog food
	Ice cream
Machinery	Farm equipment
Rubber products	Tires and tubes
Building materials	Asphalt tile

2. *Industrial Market Oriented*

Chemicals	Acetylene gas and air products
	Paint and lacquer
	Sulphuric acid
	Synthetic fibers
Electrical equipment	Electrical machinery
Forest products	Treated lumber
Iron and steel products	Cans
	Bottle caps
Leather products	Sole cutting
Stone and glass products	Enamel frit
	Glass
Paper products	Commercial envelopes
	Paper boxes
Textile mill products	Textile and open mesh bags

Consumer Market Oriented Plants

1. *Automobiles*

The establishment of branch assembly plants in the automobile industry is an economic practice of locating capacity at the market. The freight cost for a finished automobile is higher than for its equivalent in parts because an assembled automobile is bulky and occupies much freight space. With the prevailing pricing practice of charging full freight from Detroit on all cars, it is possible to assemble the parts near the market and save the difference in freight costs. Both Ford and General Motors depend heavily on branch assembly plants and establish new plants whenever the demand in an area becomes large enough to support an economic size plant. Postwar market surveys indicated a rapid growth of the Southeast and both of these companies, as part of their more widespread expansion, located new assembly plants in this area. General Motors located a plant at Atlanta, Georgia, to produce the Buick-

Oldsmobile-Pontiac models and to supplement the Chevrolet assembly plant the company already had in that city. The Ford Motor Company, which sold its Atlanta plant in 1941, has established another at Hapeville, a suburb of Atlanta, to assemble the company's lower priced models.

Selection of the location for each of the new plants began with only one prospective area. Both companies had previous operating experience in Atlanta, which is the central distribution point for much of the Southeast. A labor survey indicated that the necessary labor would be available. Because all of the plant requirements could be met at the market center, no other locations were given serious consideration.

Although both companies will employ large labor forces, neither wage rates nor unions were important locational matters. Ford has a policy of uniform wage rates in all of the company plants and pays the same wages in Atlanta as in Detroit and other locations. The wage policy of General Motors was more recently determined by company-wide union contracts which have tended to equalize wage rates among the many company plants. In locating these new plants, both companies anticipated that they would bargain with labor unions.

2. *Chemicals*

DRUGS AND MEDICINE—A new Phillips Milk of Magnesia plant recently established by Sterling Drug, Inc., in Gulfport, Mississippi, cost about $750,000 and employs about 100 workers, principally female. The company needed additional capacity and decided to construct a new plant rather than expand their old plant in Connecticut in order to save transport costs and provide better service to western and southern markets, and to provide a safety factor against any possible interruptions in operations.

An analysis of transport savings first directed attention toward the Midwest as a possible location. A southern location along the Mississippi appeared more attractive, however, because the company would be able to realize freight savings and to reduce the warehousing and handling costs of their liquid products by being in a warm climate.

Several southern cities were considered and the company had tentatively decided upon an inland location but changed its mind because the city selected was growing too rapidly and presented difficulties of obtaining housing for executives and foremen who were to be transferred to the new plant. After further investigation the company decided that Gulfport was a better location because of a still milder climate and because there were fewer local industries to compete for labor and hous-

ing. This Gulf location was satisfactory for handling the company's export trade.

HOUSEHOLD CHEMICALS—The South, because of its warm climate, is a good market for such household chemicals as insecticides. Yet, for some time the southern market has been largely dependent upon production in the North, despite important economies and advantages which arise from manufacturing close to the market. There are transport cost savings in orienting such a chemical plant to the market because of (a) the small size of shipments of the products in comparison to the large size of material shipments, (b) the heavy weight of the finished products per dollar of value, and (c) the availability of some of the materials close to the market. There is also the opportunity of increasing a company's sales by being at the market and providing service.

Boyle-Midway, Inc., subsidiary of American Home Products Company, one of the important producers of polishes, insecticides, and other household chemical products, had until recently been supplying the South through its Atlanta warehouse with products from the North. Even before the war, the company recognized that the South was a rapidly growing market and that the required raw materials could be assembled and manufactured locally at a substantial saving. This was especially true of bottled products. The management had also learned from its experience in locating a new plant on the West Coast that additional business within an area falls to the company with a local plant. This comes about as a result of better service to customers and also loyalty to products manufactured by "local" plants.

Soon after the close of the war the company decided that expansion was necessary and that it could most profitably be handled by closing out a small inefficient plant in the North and building a large modern plant in the South. Early in 1946 a site was selected at Chamblee, suburb of Atlanta, Georgia, and a $600,000 plant constructed which employs about 100 workers, mainly female. Selection of the specific location for the plant was a simple decision for this company, since it had a warehouse in Atlanta, knew the city, and felt sure there was a lot of potential business in the area.

3. *Electrical Supplies*

BATTERIES—A number of new battery plants have been established recently in the South. The Willard Storage Battery Company and the National Battery Company both located new plants in Memphis, Tennessee, in 1946. The Hicks Battery Manufacturing Company selected a site in Biloxi, Mississippi, for a new plant during 1947. In the same year

the National Carbon Company acquired a government plant in Charlotte, North Carolina, which it had operated during the war, and constructed another plant at Asheboro, North Carolina. Both plants will be devoted to battery production. Only the National Carbon Company's location decisions were investigated in this study.

Both the Asheboro and Charlotte plants of the National Carbon Company are to supply the southern market. The first will produce flashlight batteries and the second will produce batteries for hearing aids, portable radios, and farm radios. In general, batteries for markets in the South and the east coast states will be supplied from these plants. The rest of the country will be serviced mainly by the company's plants in Cleveland, Ohio, and Red Oak, Iowa. Increased demand for dry batteries made it necessary for the company to expand overall capacity. Especially important is the growing use of portable radios and hearing aids.

The substantial cost advantages of locating dry battery plants closer to the market were important in selecting the new locations. The low value of batteries in relation to their weight makes transport costs a significant part of total delivered costs. The two major raw materials required for the manufacture of batteries are (1) manganese, which is imported and can be delivered to North Carolina as cheaply as to Cleveland, and (2) zinc, on which a slight freight penalty accrues as compared to Cleveland. This small increase in the cost of assembling raw materials is more than offset by savings in distribution costs because of nearness to the market. Another market pull is the perishability of batteries, which are dated and delivered to the ultimate consumer as quickly as possible. In selecting the specific locations within the market area the major factor was an adequate supply of female labor. The Charlotte plant employs about 600 workers, 65 percent of whom are female, and the Asheboro plant employs about 300 workers, half being female. The company also paid a great deal of attention to community facilities and the attitude of the business leaders.

LAMPS—The importance of locating a lamp plant near the market is illustrated by the statement of one producer that for one incoming carload of raw materials there are two outgoing carloads of finished products because of the greater bulk of the latter. Transportation costs are further increased because the products are fragile as well as bulky.

The General Electric Company established its first lamp plants in the South shortly before the war—a fluorescent lamp and glass tubing factory at Jackson, Mississippi. It expanded its southern production facilities in the postwar period by locating a "sealed beam" auto headlight plant and a glass factory at Lexington, Kentucky, a radio tube and lamp lead wire plant at Goldsboro, North Carolina, and a plant at Memphis to manu-

facture Christmas tree lamps and miniature lamps. Westinghouse, the other major producer of lamps, has selected Little Rock, Arkansas, for a four million dollar incandescent lamp factory and Richmond, Kentucky, for a miniature lamp plant.

Selection of Little Rock by Westinghouse is an excellent example of the locational process in the lamp industry. The company wanted to increase its lamp capacity by building a new plant to service the demand outside the East. As a result of the breadth of the market and the difficulties of satisfying the plant's substantial labor and gas requirements, the area south of Pittsburgh, from the eastern seaboard to Oklahoma, was surveyed for likely locations. Two company officials spent six months checking many cities in this area. Southern Indiana was the center of the market to be served but a city with a satisfactory labor supply could not be found in that area. About 800 people, mainly female, were to be employed in the new plant. Little Rock was off-center but was finally selected because it had a good supply of labor and attractive rates for natural gas. A special local requirement, which was met, was the location near a good residential district. The plant will have a two-shift operation and some of the women employees will leave the plant after midnight.

High freight costs on the sealed-beam headlights and a fairly concentrated market restricted the locational choice of the new General Electric plant more than it was restricted in the lamp case above. The Lexington, Kentucky, plant supplies the auto manufacturers and the warehouses of the major auto parts chain stores. The area considered was from Illinois to western Pennsylvania and from Michigan south into Kentucky.

4. *Food*

A number of plants producing food products in the South are oriented to their markets, although the main food processing developments are material based industries and are discussed in Chapter Five. Ice cream is closely tied to local consumption markets because of its perishability. In response to the increased demand in the area, Swift and Company built a $500,000 ice cream plant in Houston, Texas.

Another new food establishment in the Southwest is the $2,250,000 candy plant of the Curtiss Candy Company at Dallas, Texas. This plant will employ up to 1,200 persons. In this industry, nearness to market is important in order to give customers better service and fresher products. Since many of the raw materials will be readily available in the South, there will also be the advantage of cost savings over shipping from northern plants.

The Ready Foods Canning Corporation has located a dog food plant

in the southern market. Charleston, South Carolina, was selected for this plant because of the availability of space in a former war plant at a reasonable rental. Most of the raw materials used are available in the South and the new location will result in savings in transportation as compared to supplying the Southeast out of the company's Chicago plant.

5. *Machinery—Farm Equipment*

The agricultural market in the South is responsible for attracting several new postwar plants. The International Harvester Company began the production of small tractors during 1947 at its new Louisville works established in a converted war plant. Another large plant of the company at Memphis is devoted chiefly to the production of the much discussed mechanical cotton picker. This Memphis Harvester plant represents an investment of between ten and fifteen million dollars, and the Louisville plant about 52 million dollars. The Memphis works is expected to involve a total employment of 3,500 and the Louisville works 5,500. The Allis Chalmers Manufacturing Company has leased a government ordnance plant at Gadsden, Alabama, where it is now manufacturing a mechanical cotton picker and a new type of pusher-tractor. Full operation of the Gadsden plant is expected to entail employment of 2,500 persons.

Development of machinery industries has unusual significance for the South because these activities diversify the economic structure, employ above-average skilled workers, and pay above-average wages in the South. The importance of the postwar influx of farm machinery plants to the South is best indicated by the fact that the new Memphis and Gadsden plants will together employ over six times the total 1939 employment in the farm machinery industry of the seven southeastern states.[1]

The process of locating the Memphis works of the International Harvester Company well illustrates the primary role of the market in attracting farm machinery plants. Western Tennessee is at the northern edge of the major part of the anticipated cotton picker market. Analysis of the question of whether to move materials and parts or finished products from the North made it clear that transport savings would result by locating close to the market and in line with the movement of steel and equipment from the North. Major considerations were the compact nature of materials shipments and the smaller size of product shipments to market centers.

The emphasis on the use of low-cost water transportation by the company almost predetermined a city along the Mississippi River as the

[1] NRPB, *Regional Planning—Part XI: The Southeast*, p. 131, for 1939 data.

specific location. Since it was at the head of the market area, and would therefore eliminate backhaul, Memphis was an obvious choice. Its excellent water facilities made it simple to move by water iron and steel from Chicago and the drum for the picker from the new Evansville, Indiana, plant. Not only is Memphis satisfactory for incoming and outgoing water transportation, but it has excellent rail access to most parts of the South, a good supply of labor, and low-cost fuel and power.

The new farm machinery plants at Louisville and Gadsden were also oriented to the South as the major market. Because of anxiety to get into production rapidly, the availability of satisfactory buildings was of major importance in determining the specific locations of these factories.

6. *Rubber Products—Tires and Tubes*

The productive capacity for tires and tubes has nearly doubled since before the war and almost all of the new facilities have been located outside the important production center of Akron, and within important regional markets. The South especially has benefited in this expansion. The B. F. Goodrich Company built and put into operation a new heavy tire and tube plant at Miami, Oklahoma, in 1945, and in 1946 completed another plant at Tuscaloosa, Alabama. The Goodyear Tire and Rubber Company established a southern plant at Gadsden, Alabama, in 1929. Firestone selected Memphis for still another plant to supply the South and the Armstrong Tire and Rubber Company, one of the smaller companies, has expanded its plant in Natchez, Mississippi, which was located there in 1939. These new plants are modern one-story installations which embody the latest machinery and technological developments, as contrasted to the less efficient old multi-story units in Akron.

The major reasons for the establishment of branch tire plants have been: (a) service advantages of being close to the market and (b) transport cost savings. Market studies have been made of the future original-equipment demand from the branch plants of the automobile companies and the farm implement manufacturers, and of the expected replacement sales in the various regions. In the Southwest, for example, Goodrich had concluded that about 25 percent of the tire business could be served by a location south of Kansas City and west of the Mississippi and that by providing better service it could obtain a greater share of the sales in that area.

Savings in transport by assembling raw materials and manufacturing near the market result from (1) eliminating backhaul, because the major raw material, crude rubber, is imported and can be delivered to many different locations at approximately the same cost, and because the car-

bon black, tire fabrics, and synthetic rubber are supplied from the South; and (2) the difference in size of shipments between raw materials and finished products.

Growth of the tire and rubber goods manufacturing industry outside Akron, a movement which actually began more than 30 years ago, is explained by some as a result of labor problems in Akron. The error in such an analysis is to be found in any study of distribution costs, charges for power and fuel, availability of water, and the decentralization of automotive manufacturing, principal customer of the tire industry. It should also be noted that the principal tire manufacturing companies have agreements in the new plant locations with the same union that dominates the Akron area.

The availability of a large supply of cold ground water to be used for cooling, of adequate power and fuel, and of good rail and highway transportation services were significant requirements. In locating its Oklahoma plant, B. F. Goodrich started with a list of 90 possible locations. On the basis of water requirements, the available locations were reduced from 90 to 26. The inadequacy of power and fuel requirements further reduced the list of prospective locations to 12. The need for outstanding railway service and good highways eliminated 9 of the remaining 12 locations. Out of the 3 locations remaining, Miami, Oklahoma, was finally selected because it had a slight edge over one of the other cities on labor supply and over the other in speed of service to the customers in the market area.

7. *Building Materials—Asphalt Tile*

A small but growing market oriented industry in the South is represented by the $700,000 asphalt tile plant recently located in Jackson, Mississippi, by the Armstrong Cork Company. Asphalt tile has gained wide acceptance as a resilient floor covering for commercial, residential, and other uses. Total output in 1947 was approximately 40 times that in the mid-twenties. The South is an attractive market because asphalt tile holds up well as a floor covering in a humid climate.

Until a few years ago, Armstrong divided its asphalt tile production between two plants—one at Lancaster, Pennsylvania, and one at South Gate, California. The demand for this product has been growing so fast that with the close of the war, Armstrong proceeded to build two new plants. One, to supply the Midwest, was located in Kankakee, Illinois, and another, to produce for the South, was placed at Jackson.

By locating at the market, transport savings are substantial. The chief raw materials, asphaltic or resinous binders, obtained largely from petro-

leum refineries, can be assembled at different locations without any great variations in total cost. There is no weight loss in the manufacturing process, one pound of tile being produced with one pound of materials. Transport rates on the finished products are considerably higher than on the materials. The company feels that the extra large transport burden requires that the plants be located quite close to the centers of the major markets.

The market research department of the company estimated that the calculated center of the southern market was within a few miles of Jackson, Mississippi. The labor requirements of the plant are small, less than 100 people, so there was no concern about labor supply. But the company did have a real problem in finding a satisfactory site in Jackson. In fact, at one point it temporarily abandoned the idea of locating in Jackson and surveyed other cities to see if there were advantages, such as an available building, perfect site, or outstanding transportation facilities, to offset the locational superiority of Jackson. Eventually, with the assistance of the local people, an acceptable site was secured. Armstrong also placed emphasis on the attractiveness of local living conditions.

Industrial Market Oriented Plants

1. *Chemicals*

ACETYLENE GAS AND GASES OF THE AIR—Acetylene gas and oxygen are used wherever iron and steel products are manufactured or repaired. Acetylene is made from calcium carbide and transported to the consumer in steel cylinders. Calcium carbide is manufactured from limestone and coke at a few locations where large electric power developments exist. Acetylene is produced in small plants conveniently located with respect to points of use.

Oxygen is transported to the consumer under high pressure in steel cylinders which usually weigh about eight times as much as the gas contained in the cylinder. To minimize transportation costs, one of the country's major suppliers operates producing plants in a number of the larger industrial communities, the chief production needs being air, labor, cooking water, and electric power. From these plants the oxygen is transported in liquid form by tank car or truck to filling stations located in other communities. At these filling stations the liquid is converted to gaseous oxygen and compressed into the cylinders. These cylin-

ders are loaned for limited periods to the customer. Before the demand in an area is large enough for a filling station, the full cylinders are supplied through a local warehouse.

Several new filling stations have been established in the South since the war; for example, the ones recently located by the Linde Air Products Company in Jackson, Mississippi, and in Charlotte, North Carolina. The plant investment is approximately $100,000 in each case and the labor force small. The new plants, however, are significant indicators of growing industrial activity.

PAINT AND LACQUER—A number of new paint factories have been planned for the South since the end of World War II. Among the largest are the Sherwin-Williams and du Pont plants being located at Atlanta, Georgia. The Sherwin-Williams case will serve to illustrate the locational process in this industry.

The Sherwin-Williams Company has served the Southeast out of their Atlanta warehouse for a number of years. This warehouse is being supplied mainly from the company's Chicago plant and to some extent from its eastern plant. In order to expand the company's productive capacity and to secure more of the business in the Southeast, plans were developed for constructing a paint and lacquer factory at Atlanta which will cost one million dollars and employ about 150 people, mainly male. The subsequent skyrocketing of construction costs and the uncertainties of securing equipment have, however, resulted in the postponement of construction of this new plant. The company does have a plant in Dallas, Texas, but it has never located any manufacturing facilities in the Southeast.

The area to be served by the new plant will be bounded by the Mississippi River on the west and will extend north to cover southeastern Tennessee and South Carolina. The experience of the company has indicated that the market, particularly the industrial market, in the Southeast has been growing by leaps and bounds and that the best way to secure a large share of the business is to be in a position to give quick and complete service to the trade. There was no emphasis on relative costs and the company was not greatly influenced by any prospects of cost savings. Atlanta was considered to be the industrial center of the Southeast. As the company already had a warehouse there and was satisfied with the location, it did not look elsewhere.

SULPHURIC ACID—Rising demands in 1947 for the basic chemical, sulphuric acid, called for the construction of new plants and the resumption of operations in government-owned wartime plants. Gains in consumption in the fertilizer, iron, steel, chemical, paint, rayon, alcohol, petroleum refining, and other heavy consuming industries have offset the drop

in military buying after the war. Largest tonnage consumer of sulphuric acid is the fertilizer industry which uses the acid for superphosphate and mixed fertilizer.

Increased production is expected in the South, Midwest, and Far West. The greatest additional output, however, will occur in the South where operations have been resumed by a private operator in the war plant at Tuscaloosa, Alabama, and where new plants at Mobile, Alabama, and near Richmond, Virginia, have been constructed.

Minimizing transport costs, which are greater for the finished product than for the incoming materials, causes sulphuric acid plants to be oriented to the market. The major raw material, powdered sulphur, is less bulky than the sulphuric acid because of the addition of oxygen and water.

The new du Pont plant on the James River near Richmond, Virginia, is a source of supply for the company's nearby cellophane plant and for the other acid requirements of that area. The specific site was selected mainly because of proximity to the Spruance rayon and cellophane plants and because of access to river transportation facilities which permits through shipment by water of sulphur from Texas. The plant employs only about 20 workers.

SYNTHETIC FIBERS—The synthetic fiber industry is one of the rapidly expanding industries in the United States with wide representation in the South. Production of rayon increased in the United States from 380 million pounds in 1939 to 1.1 billion pounds in 1948. Nylon, a synthetic fiber produced only by du Pont, went into commercial production in 1939, in 1946 totaled about 25 million pounds of yarn, and a capacity of 60 million pounds was reached by the end of 1948. Other less important synthetic fibers are also becoming increasingly important.[1]

The synthetic fiber industry has accounted for the largest plants located in the South since the war. These plants are large in investment, in number of employees and in potentialities for expansion. The Celanese Corporation has built a new yarn plant at Rock Hill, South Carolina, estimated to cost forty million dollars and to employ 5,000 workers. Similar Celanese facilities at Celco (near Narrows), Virginia, were also expanded. American Enka is constructing a new rayon tire yarn plant near Morristown, Tennessee, the initial unit of which will cost twenty-five million dollars. The final plant is estimated to cost twice that amount. The du Pont company has expanded its acetate process rayon plant at Waynesboro, Virginia, and its nylon yarn plant at Martinsville, Virginia. A third nylon yarn plant has been located at Chattanooga, Tennessee. In addition, du Pont is building a plant at Camden, South Caro-

[1] See p. 375–495 Pace report. *Production Studies of Synthetic Fiber and Paper.*

lina to make a newly developed fiber called "orlon." Another synthetic fiber producer, North American Rayon, has constructed new facilities at Elizabethton, Tennessee.

The market determined the general location area for all these plants. Great stress was placed on being able to provide prompt service to customers, since synthetic yarn is one of the principal raw materials of the textile manufacturer. The largest number of these manufacturers are located in the Carolinas. Consequently, there has been a concentration of new yarn facilities in those and adjacent states. Some of this yarn expansion, notably that in Virginia, will move to textile mills in the middle Atlantic states.

2. *Electrical Equipment*

The Westinghouse Electric Corporation has put into operation a new million-dollar manufacturing plant and sales warehouse in Houston, Texas. The plant is market oriented for the manufacture, maintenance, and repair of heavy electrical equipment. The company has located similar plants elsewhere in the country when local industry became sufficiently large to warrant such servicing.

3. *Forest Products—Treated Lumber*

A new wood processing plant of the American Lumber and Treating Company went into operation in 1946 on a 140 acre tract at Florence, South Carolina. The new plant cost about $750,000 and employs between 120 and 170 men. Construction of the plant is the result of a decision to relocate and more than double the capacity of a plant formerly operating in Massachusetts. That plant was closed because the plant's major customer, a railroad company, had acquired a wood treating plant of its own through a merger.

The company does not buy and sell forest products—with the exception of poles—but operates as a service station by pressure-processing wood for others. Chemical treatment of railroad ties, telephone and telegraph poles, wharf, dock, and bridge foundations and structural lumber for industrial plants, farm buildings, and homes will be performed at the Florence plant. Coal-tar creosote or salts are forced into the wood to protect it against decay, dry rot, and termites. A fire-retardent is applied to lumber which is to be used where the fire hazard is great.

The company established an internal postwar planning committee prior to the end of the war to recommend areas where the prospect for increased demand would warrant the establishment of new wood treating

plants. The company already had four other plants in the South—two in Arkansas and one each in Louisiana and Florida. A fifth plant in the coastal Southeast was decided upon to serve the textile industry in the Carolinas and the railroads.

The service character of the business and the higher outgoing transport costs because of the additional weight of the treated lumber made it desirable to locate near to the point of use. Unnecessary hauling is eliminated by having the plant in line with a good supply of raw materials on one side and the market on the other. The importance of rail transportation makes it also important to be at a crossroads of at least two rail lines. Several locations which fulfilled these requirements were available in the southern part of South Carolina. The Atlantic Coast Line railroad greatly influenced the selection of Florence, which is farther north than the other locations considered, by providing a satisfactory site and a contract for treatment of the railroad's ties, timbers, and lumber.

It is interesting to add in regard to the question of freight discrimination that the freight rates on poles are unusually favorable, making it possible to ship into New England and sell competitively from the South Carolina location.

4. *Iron and Steel and Their Products*

CANS—The freight cost for shipping empty cans, because of their bulk, is much higher than the transport cost for the equivalent in tin. Consequently, can companies are almost forced to build new plants within a market area whenever the demand in that location will support an economic sized plant. The economic size of a plant and the savings achieved by a market location will depend upon the size of the cans.

As part of its postwar expansion program, the American Can Company completed a new $1,000,000 can manufacturing plant at Fort Smith, Arkansas. The decision to build a new plant in the Oklahoma-Arkansas area came as a result of the rapid growth of the canning of local spinach, tomatoes, and green beans. Fort Smith was selected as the proper location to serve that area. The company already had a warehouse located there. No other location was considered.

BOTTLE CAPS—A bottle cap factory was established in 1947 in Dallas, Texas, by the Armstrong Cork Company. The major raw material, tin plate, is supplied to the company out of the Chicago area. Prior to the establishment of the new plant, considerable backhaul was involved in transporting the tin plate to Lancaster, Pa., the company's only bottle cap plant, and then transporting the bottle caps, mainly by rail, to the Southwest and other areas. The Dallas plant will receive the tinplate at

employ 125 persons and manufacture commercial envelopes to serve the territory east of the Mississippi River and south of Kentucky and Virginia. The major consideration in establishing the new plant was not a matter of cost but to provide better service to an area formerly supplied by the company's plant in New England. Proximity to the important trade center of Atlanta and the excellent transportation facilities to all points in the territory were the important considerations in selecting the specific location.

PAPER BOXES—The manufacture of paper boxes is market oriented for two basic reasons. Of greater importance, transport costs are minimized by locating near the market, since paperboard, the major raw material, is shipped in large quantities taking a lower rate than the finished products which are shipped in less than carload lots. Also, better service can be provided from local plants, since most orders are designed to meet the customers' specific needs.

Since the end of the war, at least three new container plants have been located in North Carolina. The Container Corporation of America and the Gaylord Container Corporation have established sizable plants in Greensboro and the latter company has also built a smaller plant at Hickory. The Gaylord company previously supplied this area out of their Greenville, South Carolina, plant, which has tripled in size within the last ten years. The recent expansion of consuming industries in the area, the location in North Carolina of a large mail order center by a big customer of Gaylord, and the shift from wood cratings to cardboard packing by the furniture industry have combined to create a tremendously expanded demand for paper containers. Gaylord therefore decided that it would be more profitable to establish two new plants than to expand and continue supplying the North Carolina region out of Greenville. Several locations were surveyed. One was eliminated as a possibility because it was a college town and the company felt that it would be difficult to find enough people to do factory work. Another likely location was turned down because a paper box manufacturer was already located there. On the basis of labor supply, transportation facilities, and proximity to some of the company's best customers, Greensboro was finally decided upon.

8. *Textile Mill Products—Textile and Open-Mesh Bags*

The Bemis Bro. Bag Company early in 1947 selected Jacksonville, Florida, as the location for a new plant. The new plant makes and prints bags from cotton, burlap, and open-mesh cloth, largely for commercial feeds, fertilizers, cabbage, citrus fruits, and potatoes. The plant furnishes

employment for approximately 75 persons, mostly women. The company has stated that Jacksonville was chosen because of its growing importance as an industrial center and the increased necessity of serving bag users in the southeastern states more efficiently.

The manufacture of textile bags is a service business. Consequently, the company found it desirable to locate a large number of plants throughout the country in order to give better service and thereby secure a greater share of the business from each market area. There is also an elimination of backhaul which results in a saving in transport costs by moving the materials directly to the market for processing. For these reasons the company is always looking for expanding market areas which can be more profitably supplied by a new plant. As part of its market research program the company recently made a survey of the prospective demand for its products along the southeastern seaboard. The government crop support program was considered and the trends in each commodity that might use the company's products were reviewed. The agricultural crop production data were supplemented by the company's own delivery statistics and by personal interview with representatives of each group of customers. This survey indicated that the area was expanding and it would be profitable to establish a new plant in that area. Plants at Memphis, Norfolk, and New Orleans previously supplied the Southeast.

None of the smaller towns in the area were considered in the selection of the actual location because they did not have a large enough local market. Jacksonville and Savannah were the two locations seriously considered. The final choice was made on the basis of two factors: (a) facilities for providing the best service to the customers, and (b) the location with the lowest transport costs for materials. This included in-freight on the cotton cloth, much of which was to come from the company's own plants at Jackson, Tennessee, and Bemiston, Alabama, and proximity to a port of entry for the burlap cloth. Savannah had the advantage of being a port of entry for the burlap, but Jacksonville was more attractive because of the large number of local customers and because it leads into a big trade area. The elimination of backhaul by supplying the area out of Jacksonville instead of from Memphis, Norfolk, and New Orleans is estimated to result in a very substantial freight saving to the company. It is anticipated that the citrus business and other bag consuming industries in the area will grow and that this plant may have to be enlarged within the next few years.

FIVE

Southern Materials

UNDER some economic and physical conditions, supplies of materials exert the dominant influence on location. These situations are discussed in this chapter. Also presented are a series of illustrations dealing with the major types of materials. Each of the six materials groups covered could furnish the basis for a much greater, more diversified growth of industry.

Materials as a Location Factor

1. *Materials as a Primary Factor*

Manufacturing activity is attracted to sources of materials under these conditions:

a. Where the major required materials are perishable or not freely transportable.
b. Where transport costs are an important part of total delivered costs and where materials are more expensive to carry than the finished product.

Raw wool and raw cotton are nonperishable and freely transportable. Consequently neither wool nor cotton manufacturing would necessarily be attracted to the source of materials. Raw milk, on the other hand, must be handled as highly perishable despite recent strides in refrigeration, and moreover is subject to weight loss in processing. Manufacturers of most dairy products, therefore, must be near sources of the basic material. The same influence is likely to affect the location of users of natural gas and electricity. Although the availability of these services can be geographically extended after a time, they cannot be furnished quickly to new consuming areas. Thus, chemical plants utilizing large amounts of natural gas—for example, du Pont's nylon salt plant—or metal plants utilizing large amounts of low-cost electric power—for ex-

ample, the Wolverine Tube Division's copper tubing plant—can consider for immediate plant location only those areas where these materials are already available.

Savings in transport costs, one of the key objectives for many types of manufacturing establishments in selecting the proper location, usually result from being near the source of materials if there is a large weight or volume reduction in the particular manufacturing process. The manufacture of phosphorous which requires 10 to 15 tons of phosphate rock for each ton of finished product has already been cited as an illustration of a material oriented plant. The manufacture of pulp and paper, where only about 40 percent of the weight of the pulpwood is embodied in the finished product, is another example. Under such circumstances, it is obviously uneconomic to pay transport costs on the waste material for long distances. In the manufacture of wool and cotton textiles, on the other hand, practically all the weight of the yarn and other raw materials is utilized, and transport costs are a small part of total costs. Consequently, in locating such industries any saving in transport costs is much less important than possible savings in labor costs or advantages in service to customers.

2. *Materials as a Secondary Factor*

The influence of materials has usually been small in the location of plants peculiarly dependent on labor supply. At times, however, manufacturers are able to choose between several satisfactory labor areas and to save on costs of materials, power, or fuel. For example, one company picked one labor area rather than another in order to take advantage of a considerable saving on electric power. Officials of another company frankly admitted that they had failed to analyze power costs at alternative sites. After they located in the TVA area because of the availability of a plant building and a labor supply, they discovered that their savings in power costs as compared with operations in the North would pay for the entire cost of the plant over a 10-year period.

Materials have been a significant secondary factor also in the market oriented cases discussed in the previous chapter. They have been of importance in two ways. First, the local availability of some of the necessary materials has often added to the advantage of locating within the southern market. For example, the new asphalt tile plant at Jackson, Mississippi, previously mentioned, will secure one of its major raw materials, asphalt, locally and will realize an important transport cost advantage in its location, although it is based mainly on market considerations.

Second, materials have often determined the specific location within the market area. The new Celanese synthetic yarn plant, for example, had to be located on a site where it could obtain 100,000,000 gallons of water daily. Water was also an important requirement in site selection for the tire plants. These cases indicated that, although often classified as a ubiquitous material, water in large quantities and of good quality may be so difficult to find that its availability will determine the specific plant location within a generally satisfactory zone. Likewise, natural gas has been an important factor in selection of particular locations. In fact, in several cases, supply and cost of natural gas have led companies to choose places for market oriented plants which were somewhat removed from central distribution points.

3. *Materials in the Postwar South*

Although materials have been less important than markets in attracting new industry to the South in recent years, many new plants have been established in southern states because of the local availability of agricultural products, forest resources, minerals, natural gas, petroleum, and electric power. In some of these instances, the resources in the South were less developed than those in other regions. To a considerable extent the South is now "catching up" in material processing operations.

Natural resources, where they act as a primary location factor, have recently drawn industry to the South because of advantages over competitive regions. These advantages were of the following types:

a. Lower cost resources, e.g., low-cost electric power and natural gas.
b. Materials closer to the market, e.g., phosphate rock.
c. Materials available in larger quantity, notably in terms of reserves for the future, e.g., pulpwood.
d. Materials feasible of development at low costs and in adequate quantities, e.g., the agricultural products on which meat packing and the dairy industry are dependent.
e. Cheap materials made usable by technological achievements, e.g., cruder wood pulps for newsprint and milo maize for products usually made from corn.

4. *Shortages of Iron and Steel as a Locational Deterrent*

Just as the availability of certain materials attracts new plants, the inability to secure other materials discourages local expansion. The shortage of iron and steel in 1947 is a case in point. Not only was it impossible for some prospective southern plants to obtain steel mill products from

nearby mills, but partly because of the operation of the basing point pricing system it was impossible to get supplies from northern mills. A manufacturer of electrical appliances seeking a location in Little Rock, Arkansas, in 1947 had to drop his plans because of inability to get steel deliveries. In a similar situation, a textile machinery manufacturer explained that if his company wished to place a major plant in the South, where most of its output was sold, it would have great difficulty getting iron and steel. In the North the company already had established suppliers but in the South it would have to take its turn as a new customer. Thus, the locational advantage to the textile machinery industry in being close to its market was ineffective, because of the shortage of key materials.

Material Oriented Plants

The new southern plants classified as material oriented were based on the following resources and will be discussed under these headings:

Agricultural products	Minerals
Electric power	Natural gas
Forest products	Petroleum

1. *Agricultural Products*

The industries investigated which were dependent upon a supply of agricultural products included dairy products, meat packing, poultry dressing, and corn products. Other important industries in this category omitted from this study because of limited time for interviewing are tobacco products, processed citrus fruits, frozen foods, vegetable oils, and rice cleaning and polishing.

DAIRY PRODUCTS—With the older dairy regions already highly developed and with a steadily growing national demand for dairy products, the South has become one of the most promising frontiers for increased milk production. By 1944, the thirteen states of the South accounted for 18 percent of total United States milk production. Arkansas, Kentucky, Virginia, and the Tennessee Valley area have been outstanding in more recent years in this continued dairy development.

Availability of milk can attract a wide variety of dairy products industries. Perishability is a major limitation on moving milk a great distance for processing. Weight lost in preparing most types of dairy products is

substantial and is another reason for locating close to the source of materials. It will be remembered, however, that two types of plants using raw milk—dairies and ice cream manufacturing—were classified as market oriented, but in these cases, supplies are usually developed near major markets.

Leading industries based upon the supply of milk are cheese factories, creamery butter factories, and evaporating plants or condenseries. In the same group but of lesser importance are powdered milk plants and ice cream mix plants. In the postwar South, cheese factories have been most important. One of the largest cheese factories in the United States was opened by the Kraft Foods Company in May, 1947, at Bentonville, Arkansas. The recent experience of the Pet Milk Company with an ice cream mix plant in Georgia indicates a possible field for further development in the South.

Local availability of an existing or potential milk supply will determine the general area of a new plant. Of course, milk and other agricultural products differ from most other resources in that they have to be produced. In order to induce farmers to invest in milk production there must be an immediate market for their output. Processors, on the other hand, cannot set up new plants unless the milk supply exists. So that in the development of dairying there is a "which comes first, the hen or the egg" proposition. The problem is solved by extending the operations from existing plants into new areas. First, a milk receiving station is set up, which is a collection center for a more distant plant. As the supply grows a processing plant will replace the receiving station. The approximate minimum quantities required for different types of plants, according to certain companies in the field, are as follows:

Creamery	1,500,000 lbs. of butterfat per year
Cheese factory	40,000 to 50,000 lbs. of milk daily
Powdered milk plant	60,000 to 80,000 lbs. of milk daily
Evaporating plant	500,000 lbs. of milk daily for a good sized plant

Since the demand for dairy products has grown rapidly, processors, particularly the larger ones, are on the lookout for farming areas which can support new plants. Suggestions for a new plant may arise from company research on consumption and production trends, from an employee in the field, or from the promotional efforts of a particular community. These possibilities are investigated by the company's own field staff. Important matters checked are the quantity and quality of the existing milk production in an area, requirements of competitive purchasers, the general character of the territory (climate, soils, feed crops), farming standards, and attitudes of community leaders. Also significant

is the relative profitableness of other types of agriculture in the community.

Establishment of a dairy products plant in a newly developed area involves a gamble on the maintenance or expansion of the local milk supply. For this reason, local cooperation in the promotion of dairying is always given considerable weight in selecting a location. Most concerns have had some unsuccessful experiences. For example, one company had to close a plant in Texas because the local cattlemen, who were opposed to the development of dairying in the region, bought all the bulls and shipped them to distant localities. In other communities the rising profits from cotton have led to the closing of milk processing units.

The Pet Milk Company cited Greeneville, Tennessee, as one of the outstanding examples of successful promotional efforts. The company first went into that area twenty years ago when there was very little milk production. The agricultural schools, county agents, local bankers, and businessmen all joined the dairy development campaign. During the first year and a half over 1,000 dairy promotional meetings were held with farmers. A program of financial assistance in the importation of bulls was arranged for and in the first ten years about 1,200 bulls were shipped in. At present, the Greeneville unit is one of the larger milk processing plants in the South.

The actual selection of a site within a prospective milk producing area may depend on differences in local leadership, although the community selected is usually near the center of the area. The power, fuel, and labor requirements are of very minor importance. The companies interviewed stated that they were not interested in special local inducements but primarily in assurance as to the supply of milk. A further remark on gifts merits quotation: "We do not ask for any funds or for a building from local groups. All we want is a site at a fair price, fire protection, and an adequate water supply." The water supply is especially important for an evaporated milk plant because such a plant will use as much water as is normally required for a city of 3,000 people.

MEAT PACKING—The demand for meat products in the South has been stimulated by the rising level of income. In order to supply this growing market there has been a strong trend toward placing new plants between the market and animal producing areas. The Southwest has been a large producer of livestock and instead of shipping the livestock north to be fattened for processing at northern plants and then reshipping the meat products to the South, it has been possible to eliminate backhaul by establishing local plants, based in part on new feeding operations. Since the end of the war a number of new plants and expansions have been

made in Texas, Tennessee, Georgia, North Carolina, and Florida. Swift and Company, for example, is developing a new packing plant at Jackson, Mississippi, and is expanding existing plants at Nashville, Tennessee, and Ocala, Florida.

An adequate, stable supply of livestock will determine the general area in which to place a plant. Not only must the supply of livestock in an area be adequate to support a minimum sized plant but the supply must be fairly steady over the year. For example, a six month's period of shutdown or low-level operation would normally rule out a prospective location. Stability of supply as well as total supply can be substantially changed, however, by the development efforts of agricultural agents, local groups, and the company's field personnel.

The selection of the specific location for a plant will usually be determined by the transportation network in the area of supply, the willingness of the local groups to cooperate on a development program, and the availability of a satisfactory site. In the selection of Lake Charles, Louisiana, for a $1,000,000 Swift plant before the war, a successful local feeding operation and a supply of low-cost natural gas to be used for fuel were attractions. Labor requirements are not large and, if necessary, can be met by employees coming to the plants from a fairly wide area.

POULTRY DRESSING AND PACKING—A promising development in the South is the large-scale raising of poultry and the attendant poultry dressing and packing. Several areas, notably in Texas, northwest Arkansas, the Shenandoah Valley of Virginia, and northern Georgia, have been fostering poultry growing.

One factor in the expansion of broiler operations in the South is the fact that egg-laying flocks in the Midwest and coastal regions of the East and Southwest have been decreasing, due to the greatly expanded production of eggs per hen. This has given the South a chance to fill the vacuum by specialized production of chickens for meat. The South has the further advantage of weather which permits year-round outdoor poultry raising and savings in construction costs. Feed, on the other hand, costs more because much of it has to be shipped from outside areas.

The minimum supply which will justify an economic sized processing plant was stated by one producer to be 2,000,000 pounds per year. Demand for poultry, during and since the war, like demand for most food products has been high. Consequently, the big operators especially will locate a plant wherever there is enough poultry to support an operation or where there is good reason to expect a sufficient supply to develop.

Recent developments in raising broilers have resulted in a factory-like process in which one man handles 15,000 chicks. The chicks which are started in the process are ready for sale in 13 weeks as 2½ pound broilers. Labor costs are small in the growing process and are estimated to be about 5¢ per chicken for the dressing and packing. In the main, women are used in the latter operation.

Development work in many of the newer areas has been spearheaded by feed dealers, who advance the feed to the growers on credit for the 13 weeks period. For example, Swift and Company recently established a large broiler dressing plant at Gainesville, Georgia, where the area had been developed through the efforts of local feed dealers.

Preparation of high quality frozen poultry for a distant market has been the base of expanded operations, especially in the Southwest.

CORN PRODUCTS—In response to growing industrial and consumer demand, the corn products industry expanded from an annual grind of 80 million bushels of corn in the prewar period to a 1947 total of 139 million bushels. The major problem of the industry has been to secure an adequate supply of corn. In 1948 the annual grind fell to 110 million bushels. As a culmination of many years of research by the U. S. Department of Agriculture and the Corn Products Refining Company, a process was perfected in 1944 for manufacturing starches and dextrose sugar from grain sorghum, commonly known as milo maize. This technological development not only made it possible to increase the output of corn products without an increase in the regular corn crop, but also made it possible to diversify the risk of raw material shortages by developing a second source of materials.

The Corn Products Refining Company, the industry's largest producer, selected Corpus Christi, Texas, as the location for a new plant to utilize the new process on the basis of sorghum grains from south and south central areas of Texas. The new plant cost between $12,000,000 and $15,000,000 and is to employ about 300 men. Transport costs are minimized by locating a corn products plant at the source of materials. There is 100 percent yield from the sorghum grain but about one-third of the raw material weight is in feed by-products. The market for the refined products is partly regional but primarily foreign, whereas the market for the feed is local. Local demand for feed is strong, partly because of declining production of cottonseed meal and cake.

The search for a general area of materials quite naturally centered in Texas, the major producer of sorghum grain. This crop had been greatly stimulated during the war for conversion into industrial alcohol. The wartime demand had fallen off, however, and a surplus in the Texas area

seemed quite certain. The biggest producing area in Texas was the Panhandle but the area north and west of Corpus Christi was selected because the company wanted a surplus supply close to the seaboard.

In fact, the company early decided that it wanted a seaport location with large quantities of water and cheap natural gas. The port location was considered necessary in order to economize on loading and transfer costs in supplying the export market; about 2 million gallons of water per day were needed because of the wet milling process and cheap natural gas was important as a fuel because the process is one of dilution and evaporation. The combination of requirements for the new plant directed attention to Corpus Christi as the best location.

2. *Electric Power*

Electric power alone attracts few industries to a region. These exceptions are mainly the electrochemical and electrometallurgical operations, of which the manufacture of aluminum is a well-known example. The general locational importance of electric power is best described as "improving the industrial environment."

The $8,000,000 nonferrous tube plant located at Decatur, Alabama, by the Wolverine Tube Division of the Calumet and Hecla Consolidated Copper Company is an interesting example of a plant attracted to the TVA area principally because of the need for low-cost electric power in the manufacturing process. Wolverine is a primary mill and is engaged in the manufacture of nonferrous tubing from raw materials. The copper used in the production of copper and copper-base alloy tubes comes from the parent company in Calumet, Michigan, and the finished products are shipped to refrigeration and air conditioning manufacturers, public utilities, housing contractors, tube fabricators, and a multitude of other users located primarily in the north central and northeast portions of the country. Recent technological developments have increased the requirements for electricity to the extent that this factor is now of major cost importance. The low cost of TVA power was naturally investigated. Since this low-cost power was available throughout a fairly large area in the Tennessee Valley, the final selection was made only after many field investigations including consideration of economic, engineering, and social factors.

3. *Forest Products*

The tremendous upsurge of postwar demand for forest products inevitably directed attention to the South as a source of materials for the

industry's large-scale expansion. More than two-fifths of the area of the South is in forest land. These forests have a high rate of growth fostered by the climate, are close to the major market areas of the country, and are in large part held by small operators and farmers and therefore available for purchase. As a result, the South is experiencing a tremendous expansion of industrial facilities for products manufactured from forest resources.

Availability of pulpwood is the basis for the location of a wide range of manufacturing plants. Included in this study are producers of newsprint, pulp, paper, paper bags, paperboard, and insulating board. The process for manufacturing all of these products (except paper bags) involves such large-scale weight losses that the transport cost penalty would be prohibitive if the plants were not located close to the source of materials. One company stated that there was a 60 percent weight loss in transforming wood into pulpwood and into insulation board. On the other hand, plants which manufacture finished paper products from intermediate materials, e.g., cardboard containers and envelope manufacturers, have small weight losses and are oriented to the market.

In the pulp and paper industry new plants have been located or existing plants expanded in Alabama, Arkansas, Florida, Georgia, Mississippi, South Carolina, Tennessee, and Texas. The general area for the location of a mill is determined by the supply of pulpwood. With the trend toward large integrated mills involving millions of dollars worth of plant investment, it is essential that the investment in a particular location be safeguarded by the ownership of sufficient timber reserves to cover a large share of normal requirements. For example, one company acquired a block of about one million acres of pine in Georgia before locating a new plant in the area. The general pattern is to own enough forest land to supply about half of the requirements and to buy the remainder in the open market. Naturally, companies want to be in an area where their purchase requirements are not a big factor in the open market. Not only must an adequate supply of pulpwood be available but it must be available within a limited area. One concern stated that the desired supply of pulpwood should be within a distance of 50 miles from the plant.

Some of the companies have foresters within their own organization who survey sources of materials; and other companies depend on outside consultants. In one case a company decided upon the general area for its new plant by employing two different foresters to make independent surveys. The first made a fifteen month field study of the entire South and recommended two possible areas. The second made an eight

month study of these two areas. One area was more desirable because it was closer to the market to be supplied and because it would permit the use of less expensive water transportation. Yet, the preferred area finally had to be eliminated because the plant requirements amounted to 80 percent of the going supply of pulpwood in the area and because the supply of the dominant variety of tree could not be controlled or increased.

The economic range depends on the availability of water transportation and on whether the wood is to be hauled in by one or more rail lines. An official of one company made a study comparing a location selected by his company with that where a competitor was operating and concluded that the competitor's plant was suffering a penalty of $250,000 per year because of the wide area which had to be tapped, partly by multiple rail routes, in order to obtain pulpwood.

Requirements for the specific location of a pulp and paper plant within the satisfactory zone are a large water supply, waste disposal facilities, transportation facilities for receiving raw materials and shipping finished products, labor supply, attractiveness of the community as a place to live, and the receptiveness of the local population. The new Southern Paperboard Company plant at Port Wentworth, Georgia, requires ten million gallons of water daily. The location of this mill in the Savannah area was therefore made contingent upon the building of a new industrial water plant large enough to supply the new plant. The water transportation facilities at Port Wentworth were important to the new plant because they made it possible to ship about half of the output to eastern consumers at a lower cost than by rail. The new Johns-Manville insulation board plant at Natchez, Mississippi, encountered a waste disposal problem which was solved by an official clarification of the state stream pollution laws. Community considerations were important to the Armstrong Cork Company in establishing their new insulation board plant at Macon, Georgia.

4. *Mineral Products*

Industrial expansion in the South based on mineral resources, although not proceeding on the scale of the wartime metal expansions, has still been part of the postwar picture. Several new plants are involved—for example, glass manufacturing in Oklahoma based on the local high quality sands and on natural gas, a roofing granule plant in Arkansas to grind nepheline syenite, sulphur mining plants in Texas, and phosphorus plants in Tennessee and Florida.

In the case of sulphur, the location of a commercial deposit of the mineral determines the location of the sulphur mining plant. Other factors enter into the development and the size and nature of operations. For example, the Texas Gulf Sulphur Company, which began building a new sulphur plant in 1947 near Liberty, Texas, explained the problem as follows: "The location of a sulphur mining plant is wholly conditioned by the geological occurrence of the mineral which in this instance was located at Moss Bluff Dome. The decision as to the development of such a dome is of course predicated upon its discovery and exploration as indicating the possibilities of a commercial deposit, while the time of such operations is determined by consideration of the general economic situation as it might affect the sulphur industry and the apparent capabilities of the Frasch process being applicable to the deposit; further, the legal obligations which exist with reference to the properties relative to their development must also be considered."

Production of phosphorus requires a somewhat more complex location decision. The two largest commercial producers of phosphorus, Monsanto Chemical Company and the Victor Chemical Works, have both increased their production facilities since the end of the war. Both companies expanded existing plants in Tennessee, and Victor Chemical in 1946 also selected a location near Tarpon Springs, Florida, for a new two million dollar plant.

The importance of access to the market as a factor in deciding among the three well-known phosphate rock deposits has already been mentioned. The Tennessee deposits are closest to the market and a large supply of electric power and coke, which is required for the production of phosphorus, is readily available in that area. The reserves are comparatively small, however, and are being steadily used up. The choice of the area for the new plant by Victor was therefore between the western deposits in the states of Montana, Idaho, Utah, and Wyoming, and the Florida deposits. The western reserves are the largest but have the disadvantage of distance from the market and higher-cost electric power and coke. Consequently, the Florida area was selected for the new plant. Electric power will be more expensive in Florida than at the old plants in the TVA area, but because Florida has a large power surplus, except at times during the peak winter vacation period, it was possible to work out a satisfactory arrangement with the power company. As noted previously, the manufacturing plant has to be at or near the phosphate rock deposits because of the mass of rock required per ton of phosphorus. Tidewater and rail transportation facilities were other requirements which helped fix the location.

5. *Natural Gas*

Natural gas has been so abundant and its uses so limited in the southwestern oil fields that billions of cubic feet have been annually blown into the air without being utilized in any way. During and since the war, however, an increased price has encouraged utilization. Moreover, extensive research by uncovering additional applications has encouraged better use. Many large scale chemical plants have in recent years been constructed in or near the oil and gas fields in order to take advantage of the availability and low cost of natural gas.

Two sizable new operations tied to natural gas supplies are a plant for nylon "salt" and other chemicals at Orange, Texas, and a livestock remedy and agricultural chemicals plant at La Porte, Texas, near Houston—both postwar expansions of E. I. du Pont de Nemours & Company.

The new Sabine River Works of du Pont, near Orange, Texas, provides more basic materials for the expanded nylon yarn production at Chattanooga, Tennessee, and Martinsville, Virginia; adds capacity for the output of polythene, an outstanding plastic in the fields of electrical insulation and molded articles; and produces methanol, a basic industrial chemical.

Nylon "salt" is the name given to the chemical intermediate which is used in making nylon yarn. Nylon has been popularly described as being produced from coal, air, and water, and du Pont produces much of its nylon "salt" at a West Virginia plant located in the coal fields. As coal has increased in price during recent years there has been a strong incentive to substitute gas as a basic material. And it has been possible to develop a new process whereby this can be done. Nylon "salt" is now being produced more economically with gas as the main raw material. Construction costs were somewhat less in Texas because of the mild climate. Moreover, production costs have been further reduced because gas can be used for generating power instead of coal, thus obviating the need for expensive coal handling equipment. Two of the important production requirements which influenced the specific location were labor and water supply. The first unit of the works, which was completed in 1947, will ultimately require about 1,000 employees. The plant site selected was far enough up the Sabine River to get fresh water.

The Houston Works at La Porte began operation in 1947 and is manufacturing acetic anhydride and new products for control of animal parasites; for protection of a wide variety of fruits, vegetables, and other crops against attack by fungus diseases; for disinfecting seed; and for

control of fungi attacking golf and lawn turfs. The plant is based on using the off gases, propanes, and natural gases of the Texas oil fields and other raw materials. The specific location was largely influenced by the availability of a local shipyard on the ship canal as a site for the plant. One of the big factors in placing the plant was nearness to extensive livestock areas.

6. *Petroleum*

REFINING—Petroleum refineries may be either material or market oriented. In the refining process the crude oil is almost fully converted to marketable products. Consequently, there is only a minor pull toward the source of materials as a result of weight loss. The cost of transporting the crude is about the same as the cost of carrying the refined products, so that when all the output of a refinery is going to the same market area there are no transport losses from locating at the market. In fact, refineries have often been established close to concentrated market areas whenever demands support a plant of economic size. Advantages of refining at the market are ability to get oil from several fields and greater flexibility in adjusting the range of products to shifts in demand. The refineries in the Chicago area supplied via pipe line from the mid-continent fields of Oklahoma and Kansas illustrate the inland market type of plant, whereas the refineries at Atlantic ports normally serviced by tankers operating from the Gulf and in part from foreign countries comprise the seaboard market type.

Refineries which are based near crude supplies are also of two types—inland and seaboard. The inland refineries generally rely on pipe lines or railroad tank cars to market output. A greater variety of products can be transported through the pipe line than was once supposed, because there is little blending between the "slugs" of various products immediately in contact with each other, if they are of about the same density. Locating a refinery right in the field is not desirable because reserves may run out and leave the refinery without crude.

Location at tidewater near several producing fields, on the other hand, is usually desirable. The Gulf Coast plants fall in this category. Accessibility to water transportation makes it possible to ship finished products to any eastern seaboard market in an economical manner. Moreover backhaul can be avoided in supplying different products to dispersed markets. Other savings consist of lower land taxes, labor costs, and building costs than would be met in a metropolitan market district. Furthermore, the size of the refinery is not limited by the demand of

one market and all of the economies of the larger installations can be achieved, particularly if located near a source of cheap fuel such as natural gas.

The Cities Service Company refinery completed in the spring of 1945 at Lake Charles, Louisiana, is a recent example of a large seaboard plant near the producing fields of Texas and Louisiana. It is also close to the large offshore reserves of the Continental Shelf.

The specific site at Lake Charles was selected because of the excellent incoming and outgoing transportation facilities, the local availability of large quantities of fresh water, the good foundation conditions for the heavy plant equipment, and because the state repealed the processing tax initiated in Louisiana by the Huey Long administration. This tax was an important disadvantage of the location in Louisiana. The company was also granted a short-term exemption from the parish property taxes. This plant employs approximately 2,000 workers.

Transportation facilities are outstanding. There are excellent pipe line facilities for incoming crude and for outgoing products. The plant has access to the intercoastal canal and to the channel to the Gulf. Water shipments, according to the company, are as economical as pipe transportation if the fixed charges on the pipe line are normal. Water supply is exceedingly important because the refinery, which in 1947 was running well over 100,000 barrels per day, uses 300,000 gallons of condenser water per minute as well as large amounts for boiler purposes.

LUBRICATING OIL—The attraction of a source of intermediate materials is illustrated by the decision of the Cities Service Company and the Continental Oil Company to join in the formation of a new concern, known as the Cit-Con Corporation, to build and operate the largest plant in the United States for the manufacture of solvent refined lubricating oil. The plant is estimated to cost thirty million dollars and will employ 600 workers. The location selected was a site adjacent to the basic refineries of both parent companies at Lake Charles, Louisiana. Locating at the source of materials will result in economies by piping the materials to the lubricating plant and by returning the residues to the basic refineries for further processing. This integration of operations will also permit substantial savings in making fuel and power available from the refineries. The advantages of excellent transportation facilities to the East Coast, to foreign markets, and to the Midwest via the Mississippi River are the same as for the basic refinery already mentioned.

SIX

Southern Labor

AS A FACTOR in location, labor has been less important than materials and markets during the postwar period in attracting new industry to the South. Furthermore, where labor has been the primary factor in locating new plants, more emphasis has been placed on availability and on labor attitudes than on wage rates.

Labor as a Location Factor

Because labor is relatively immobile, geographical differences persist in the supply of labor, in wage rates, and in the attitudes of workers. As a result, there often are important locational advantages to be achieved in satisfying the labor requirements of a new plant.

The mobility of labor can fluctuate greatly. During World War II, with strong labor controls and a program for providing workers with housing and other basic needs at new locations, it was possible to bring workers from outside areas to staff a new plant in a congested area. In the postwar period, however, there appears to have been less movement of workers. Labor controls have been eliminated, and voluntary migration has been restricted by the critical housing shortage.

With new high production levels and consequent high levels of employment since the war, the necessary supply of labor for new plants has been difficult to secure in most of the highly industrialized centers. A news story in the New York *Journal of Commerce* (July 23, 1947) headed "Labor Dislocation Felt in Michigan" illustrates the problem of labor supply in a near full employment period.

"Grand Rapids heads the list of Michigan cities whose industries have outgrown their manpower resources. Furniture, machinery, paint, metal and woodworking plants are engaged in lively competition for the limited supply of labor.

Display advertisements in the local press are used to lure workers from their present jobs, promising paid vacations and better working conditions, steadier employment and higher earnings than those offered by rivals.

Inspection of plants and working conditions is invited of prospective employees, and one company enjoyed considerable recruiting success from a well-advertised open house staged at its plant to display its advantageous working conditions.

The result of these efforts has been a soaring rate of labor turnover, amounting to about 10 percent per month of the total number of employees in the city.

Little hope of relief can be expected from an influx of new workers, for the city's housing is already pressed to capacity."

Another important by-product of the postwar period has been the emphasis on industrial peace. Companies have been concerned not only about strikes in their own plants, but about the sympathetic disturbances which result from the labor troubles of other companies in the same area. The strikes after V-J Day influenced some companies to carry out their expansion by building plants in new locations in order to diversify the risk of being completely closed down by strikes.

Although labor costs are usually identified in the popular mind with wage rates, labor supply limitations and labor disturbances also affect labor costs. The passage of a minimum wage law before the war and the recent active campaign in many quarters for an increase in the minimum wage have impressed some industrialists with the fact that geographical wage differentials for certain unskilled work can disappear by legislative fiat. Furthermore, under peak employment conditions, wage differentials between the North and the South have been reduced or largely eliminated in a number of industrial operations since the prewar period. Thus, while the prospect of saving in labor costs through taking advantage of geographical wage differentials has been diminishing, there has been increased concern about achieving labor savings through location, where the supply of labor is adequate to reduce costly turnover, to reduce competition for workers which bids up wages, and to provide some assurance that the plant will be able to secure a satisfactory proportion of the more efficient workers, and also where labor relations are likely to be comparatively peaceful.

WHY WAGE IS PUSHING MINIMUM WAGE LAWS.

1. *Labor as a Primary Factor*

Whenever plant location has been determined primarily by labor considerations, the attraction of the South has usually been a combination of adequate labor supply, low labor costs, and favorable attitudes of workers. These will be discussed in turn.

LABOR SUPPLY—The South, characterized by the highest birth rate in the nation, has continued to have a labor surplus despite the large-scale outward migration and the accelerated trend toward industrialization in recent years. The curtailment of war plants in some of the larger southern cities left valuable groups of trained workers. In addition, the rural areas, with their underemployment and increasing displacement of farm labor by mechanization of agriculture, have been Meccas for companies willing to train their own workers and anxious to pay lower wages. It is not surprising, therefore, that under conditions of labor shortages in numerous areas, many companies have investigated the South as a location for a new plant.

Labor supply is not simply a matter of numbers but also of sex, race, age, and skills. The group of machinery plants employs mainly men but the shoe, apparel, and textile plants require a predominance of female labor. Because of company policy or as a concession to "local custom," none of the labor oriented plants employs Negroes. Consequently, in selecting a location, only the segment of the labor force which will be employed is considered by the company.

Another aspect of labor supply is the skill requirement. Although some of the new plants wanted semiskilled or highly skilled workers, the emphasis on securing trained workers has not been great. In the first place, the high level of employment utilized existing skilled labor resources throughout the country. Secondly, the great advance in training techniques which occurred during the war has made it possible to train green workers quickly. A frequent practice is to manufacture staple goods in the new plants and upgrade the products of the plant as the workers acquire experience. Most of the companies expected to hire untrained labor and to do their own training, although in some cases local schools were to be used.

The desirability of certain types of work in relation to other job opportunities in the same area is also an important labor supply problem. Many companies have placed great stress on the difficulty of securing workers in northern areas, particularly for work in the textile mills, as compared to the ease of attracting employees to the same type of employment in the South where job opportunities are limited.

One way in which a number of companies in the shoe, textile, and apparel groups thought they could safeguard their labor supply was by locating in a small town. If the new plant provided employment for most of the available labor, it was felt that other factories would not be likely to move in and compete for the labor.

Although state labor legislation in the South is less restrictive than in the North in regard to hours of work, child labor, and standards of

employment generally, none of the material and market oriented plants and only one of the labor oriented cases were attracted by more lenient labor laws. One textile company stated that its decision to locate a new plant in the South was in part influenced by the fact that the employment of women for longer hours was permitted in the new southern plant. In its New England operations, the company felt burdened by the state laws which made illegal the employment of women after 6 P.M. since the labor force is predominantly female. This prohibition in the North was recently liberalized, but the company complained that it was still necessary to secure permission from the state in order to employ women on the night shift.

LABOR COSTS—Geographical wage differentials have received considerable attention in government publications and elsewhere [1] and will not be analyzed in this report. However, there are several significant generalizations about wage differentials which emerge from the individual cases.

(a) Wage differentials between large and small towns are often confused with the North-South differential. For example, the shoe companies in the St. Louis area have plants in St. Louis and also in small towns. These small town plants in both the North and the South have about the same wage rates but a significant differential exists between the small town group and the metropolitan plants.

(b) Wage differentials for similar sized communities in both the North and the South have been steadily narrowing since before the war, and in some industries earnings have become higher in the South than in other regions. "In pulp mills, average hourly earnings in New England were 13 percent below the Southern average as of October 1945." [2] Although the small-large town wage differential is generally expected to continue, the North-South differential is expected to narrow still more and probably disappear. In any event, with few exceptions, company executives pointed out that they could not justify a large investment based only on such an uncertain matter as a North-South wage differential.

(c) Labor costs are only partially determined by wage rates. During the training period, unit costs invariably run high. But after the initial stage, labor productivity will be of prime importance. Labor turnover, absenteeism, and continuity of operations, of course, also affect labor costs. These latter factors have been found to operate in general to the advantage of the companies studied which located branch plants in the South.

[1] See "Labor in the South," *Monthly Labor Review*, October 1946, U. S. Department of Labor; also "Southern Wage Differentials" by Richard A. Lester, *Southern Economic Journal*, April 1947, p. 386.

[2] *Monthly Labor Review*, October 1946, p. 515.

(d) A new company going into a smaller city although willing to pay higher wages than those prevailing in the community will often offer approximately the going rate, in order to avoid antagonizing the other local manufacturers and creating a bad reception for the new plant in the business community. In fact, the general rule is to pay only enough more than the prevailing rates to attract the more capable local laborers.

The above considerations have convinced the authors that even though a company pays a lower wage in the South than in the North, that fact is not proof that the location decision was based primarily on "cheap" labor.

LABOR ATTITUDES AND UNIONIZATION—The importance of favorable labor attitudes was emphasized by most producers, particularly those with labor oriented plants. A history of cooperation on the part of local labor was taken by prospective manufacturers to indicate a willingness to learn new processes and an opportunity for the management and labor force of a new plant to achieve favorable rates of productivity.

With respect to union organization of workers at the new plant, the attitude of the industrialist varied considerably. The machinery group, made up entirely of northern companies, expected to be unionized and their expectations were confirmed. Nevertheless, every one of these companies thoroughly investigated the community history of management-labor relations before making a location decision. One company said, "It is not the unions we worry about but the type of people they sometimes have leading them." It was the opinion of another company that the unions in the South would not be so "radical" as in the North and West.

The companies locating new apparel, shoe, and textile plants were interested, on the whole, in staying away from labor unions. Two of the companies had no unions in any of their plants. The president of one of these companies said, "We're not running away from unions, we're just staying away from them." The other company was concerned to a lesser extent about unions because it felt that its wage and employment policy was so good that its workers would not be interested in unions. Another company emphasized that the workers in the area selected were "loyal" and for that reason unionism had not made substantial inroads. The companies with unionized plants elsewhere placed less stress on avoiding unions than did other companies.

2. *Labor as a Secondary Factor*

Where materials or markets have been the primary reasons for new industry developing in the South, labor has sometimes played an im-

portant, though secondary role by helping to determine the specific location within a satisfactory area. In these cases, the company attitudes toward low wages and unions have been strikingly different from the prevailing attitudes in the labor oriented cases.

In the majority of material and market oriented cases, labor supply was not a matter of major concern. Either labor requirements were small, as for example in the cheese factories, or else the best location within the general area, as determined by transportation facilities or proximity to a metropolitan market, was a large city, and the labor requirements of the plant were not enough to create a problem in a large population center.

Some of the important market based plants, such as those making rubber tires and electric lamps, did require large labor forces. But because the plants were tied to a widely dispersed market, the general area included several specific locations which could easily satisfy the labor demands.

Negroes are employed in many of the market and material oriented plants, but usually on less skilled work and rarely on the same jobs as the white workers. In one case community leaders urged that the new plant establish a 10 percent quota for Negroes, in order to make sure that the many unemployed whites would be assured of jobs. A few companies like the International Harvester Company are creating important job opportunities for Negroes. About half of the large labor force at its new Memphis plant will be colored. Many of the companies who have never employed Negroes were certain that such an employment policy would be impractical. On the other hand, the companies utilizing Negro labor have been satisfied with the results.

Among the market and material based plants, wage rates and North-South wage differentials also played a subordinate part. Where labor costs are a small part of total costs, there is little concern about wage rates. But here again the almost universal feeling was that wage differentials would gradually disappear. One employer said that the only long run wage savings his company expected were the differentials between small and large towns.

In a number of cases, the companies expected to pay the same rates in the South as they were paying in the North. Ford Motor Company, for example, has a long standing policy of uniform wages in all plants. General Motors also has standardized wages among their plants as a result of company-wide collective bargaining. Soon after initial operations, the International Harvester Company had to settle a strike in its new Louisville tractor works by eliminating wage differentials with respect to other company plants.

The only instance in which wage differentials were important in selecting the specific location for a market dominated plant was that of an electric lamp plant where the wage saving and saving in cost of natural gas were considered as offsets against higher transport costs to the market.

The question of unions presents the greatest contrast between the labor oriented plants and the non-labor (or market and material) oriented plants. Without exception, there was little concern about avoiding unions in locating the non-labor oriented plants. The most common reactions were that the company had accepted the principle of collective bargaining, or that there was little chance of avoiding unions, even if the company wanted to, because of the large size of the plant or because it had to be located in a metropolitan center.

The labor history of the prospective locations was investigated by the companies in all cases in which a considerable force was to be employed in the new plant. And in some cases, the labor industry of the community was used as a basis for selecting the specific location. In this connection one company said that it wanted to avoid "fanatical attitudes." On the other hand, another company indicated that this historical approach might be misleading. For example, Herrin, Illinois, in "bloody" Williamson County, has a past full of bitter labor strife and therefore has been avoided by companies looking for new plant locations. Yet the Norge Division of Borg-Warner recently located a washing machine plant in Herrin, and the company to date has been completely satisfied with the labor situation in the area.

In one interesting case the company selected a union town over an anti-union town. The management explained that they had accepted collective bargaining in their northern plant and were well satisfied. They expected their new southern plant to be organized also and they did not want to be caught in a battle between union and strong anti-union forces.

3. *Labor Productivity in the South*

In the judgment of nearly all of the companies covered in this study, labor productivity in the South is equal or even superior to that in the North. Where the productivity was considered to be higher, it was attributed to less turnover, less absenteeism, selection of a better part of the labor supply because it was not necessary to "scrape the bottom of the barrel," fewer sympathetic and direct labor disturbances, and an eager and cooperative attitude on the part of the workers. One machinery company said that the southern workers "right out of the moun-

tains" were producing 25 percent more on highly precise work than employees in the company's northern plant. Another company allowed for a 15 percent lower output per worker when they first established a southern plant, but in six months the southern workers were up to the efficiency being achieved in the North and within a year they were more productive. The company added, "They stay efficient too."

The authors wish to emphasize that labor productivity comparisons are difficult to make, because of differences in plant facilities, supervision, size of operations, and other factors. Few of the companies had made scientific comparisons. Probably the most reasonable conclusion agrees with the judgment of one of the big rubber companies that there is little difference between the work ability of people in different areas. What is extremely important, though, is the fact that although most of the companies requiring highly skilled workers were skeptical about being able to achieve within a few years a satisfactory output in the South, the experience has been that the workers are easily trained and efficient.

Most of the machinery companies became interested in the South because of critical labor shortages elsewhere or because of the advantages offered by available government sites and buildings. They were all concerned about the productivity of southern labor and they investigated the problem by talking to other manufacturers in the prospective locations. After receiving favorable reports there was still a good deal of skepticism, but when the companies were able to judge from their own experience they became enthusiastic about productivity in the South. Some of the new plants requiring fairly high skills have not yet had time to train the new workers, but they expect to achieve as high efficiency in the South as in the North.

Sample opinions on comparative labor efficiency which are representative of the general experience of manufacturers going into the South are:

A rubber tire plant: "Productivity is just as good if not better in our southern plant. That plant is an efficient producer, but an incalculable part of the efficiency is a result of the more modern layout and facilities. Wage rates are about the same as in the North and the plant is unionized."

An electric lamp plant: "Although we originally had some doubts about labor productivity in the South, our experience has revealed a high efficiency of southern labor based on the willingness and interest of the people in doing their job. Wage rates are about 15% below the rates in our main northern plant."

An automotive plant: "In most cases, labor efficiency in our southern plants is higher than in our northern plants. In the southern plants we

usually secure the best class of labor because of our high wages for the area. Labor turnover and absenteeism in our southern plants are low. When a man has a job with us in the South he wants to keep it because there aren't many other jobs as good." The rate of labor turnover for the southern plants of this concern has been averaging less than half of that for the plants outside the South.

An insulating board plant: "Of all our company's plants, the recent southern unit has the most efficient workers."

Labor Oriented Plants

The new plant locations in the South classified as labor oriented are in the following industries:

Apparel	Shoes
Machinery	Textiles

It should be noted again, however, that plants within the same broad industry group may differ greatly in type of operation and in productive process, and consequently in terms of dominant location factors.

1. *Apparel*

The South has long been an important producer of the coarser and cheaper items of apparel. It is therefore not surprising that the new apparel plants are predominantly of that type. They produce such staple items as overalls, work trousers, work shirts, men's regular and sport shirts, and medium- or low-priced women's apparel. With few exceptions, the new plants are small in terms of investment and employment, but their number is large and they have sprung up in the small towns of all the southern states. A considerable share of the output of these new factories will be for the southern market, although the South is an important source for the rest of the country of most of the types of apparel it produces.

All the clothing plants have a high proportion of female employees. Officials of Seamprufe, Inc., explained that they had been having great difficulty in securing additional women workers in their two Pennsylvania plants. "We would hire a girl and train her for three months and someone would try to take her away from us." The company therefore decided to look into areas outside of the East for a better labor situation

and in 1947 selected McAlester, Oklahoma, as the location for a new women's apparel plant.

All of the apparel plants studied were located in small towns but not always for the same reason. Small towns were preferred not only on grounds of better female labor supply, but because wage rates are usually lower in small towns and, according to some companies, turnover and absenteeism are less. In all cases the companies expected to train their own labor so that the problem was not one of securing skilled workers. Cluett-Peabody and Company, producer of Arrow shirts, has plants in both the North and South and pays about the same wage rates for similar type work in both groups of plants. Blue Bell, Inc., the world's largest producer of work clothes, has plants in two midwestern states as well as in the South. The company president said that there was little variation in wage rates between the company's midwestern and southern plants. In its McAlester plant Seamprufe will pay piece rates somewhat less than rates paid in a larger community in Pennsylvania but generally higher than local rates. The one apparel company particularly interested in low wages selected a location in a small town in the deep South, where wage rates were attractive and where the community would furnish a factory building.

The attitude and importance of labor unions varied considerably among the apparel companies. One company did not have unions in any of its plants and was interested in avoiding them. Another company had unions in some of its plants and commented that its new locations "weren't at a disadvantage from the standpoint of labor unions." The official of a third concern explained he did not worry about labor unions: "When someone else gives their employees something, I just give them a little more and we never have any union problems. Our workers have had elections and have never voted for the union in any of the plants." The minority view was that expressed by still another large apparel firm (Cluett-Peabody): "Our belief is that organized labor has improved the welfare of all, and we actively support organized labor by working with them to the best of our intelligence." The latter company has a union organization in all of its plants, including a number of plants in the South.

Despite labor shortages in many parts of the country in 1946–48, all the apparel companies were able to find several southern areas of satisfactory surplus labor supply so that each company had considerable choice in selecting a plant location. One of the companies made a comprehensive mail survey of a large number of locations. The other companies acted on suggestions by customers, suppliers, or community representatives, and kept looking until they found a satisfactory location.

Usually locations were preferred which were accessible to company headquarters or to other company plants.

2. *Machinery (including automotive parts)*

Foremost on the South's list of desirable industries for a balanced industrial structure has been the machinery industry. The expansion needs of many companies in this industry in the postwar period have been met by locating machinery plants in the South. The agricultural machinery plants attracted to the South by market considerations have already been discussed. There are a number of other cases, however, where transportation costs were comparatively small and where labor supply was the primary locational consideration.

BUSINESS MACHINES—The steady growth during the past 15 years in the demand for the adding, calculating, and bookkeeping machines produced by the Monroe Calculating Machine Company has resulted in frequent expansion of the company's plant in East Orange, New Jersey. Another increase in capacity was required at the close of World War II at which time the company decided to establish a new plant in another area.

Transport costs are such a small part of the delivered cost of the finished product that transport savings were not important in selecting a site. A satisfactory supply of labor was the primary location requirement. Because the company wanted to stay out of highly industrialized areas, a city with a population of less than 25,000 was desired. For reasons of management convenience, the search for a satisfactory location was centered in the area which was within an overnight trip by rail from the old location.

A list was compiled of about 50 possible locations in eight states—Maryland, New York, North Carolina, Pennsylvania, Tennessee, Vermont, Virginia, and West Virginia. On the basis of information gathered on questionnaires through the company's sales offices, a preliminary selection of 12 cities was made. This list was reduced to three locations after personal visits had been made to the larger group of cities by company officials who contacted the local chambers of commerce, bankers, manufacturers and others. After the final three cities were further investigated by personal visits, Bristol, Virginia-Tennessee, was selected from that group as the location for a $1,000,000 adding machine plant.

The new plant will employ between 750 and 1,000 persons, about 75 percent male. The company is training most of the new workers and was somewhat influenced in its decision by the availability of training

facilities in local schools. Also impressive was the local history of good industry-labor relationships.

A city in upper New York State was the second choice but was eliminated in favor of Bristol because the labor force in the northern location had to be drawn from a greater distance and the company felt that during the winter period in the "snow belt," absenteeism might be large.

The company was anxious to commence production quickly and the availability of temporary quarters in Bristol was an important secondary consideration. The new plant site is large and has extensive recreation facilities.

REFRIGERATOR COMPRESSORS—The Norge Division of the Borg-Warner Corporation, as part of a $6,000,000 postwar expansion program established two new plants in southern Illinois and one at Chattanooga, Tennessee. The labor supply in the Muskegon, Michigan, area, where the company's original plant is located, was inadequate to meet the requirements of the proposed expansion. Therefore an effort was made to tap the greater labor supply of the smaller cities and at the same time achieve economies of product specialization by manufacturing one product in a plant.

The company probably would not have considered a southern location but for the availability of a government-owned plant at Chattanooga. The attraction of the plant caused the company to investigate the local labor market and eventually to select the location and purchase the plant. A company official explained that the selection of a southern location was a result of "growing in their thinking."

The refrigerator compressor which is being produced in the new plant requires accuracies of 1/10,000th of an inch and greater. Because of the need for developing skilled workmen, the manager and supervisor of the refrigerator plant personally investigated the quality of available labor in the area before the final decision was made. After talking to local manufacturers, they were convinced that the number and kind of workers needed could be secured and that quality standards could be maintained. The company stated that the 300 workers originally employed—50 percent are women—have been performing the high precision work at least as efficiently as the workers in the company's northern plant. The Chattanooga plant is organized by the same union that bargains for the Muskegon workers; the company said that unionization played no part in the locational decision.

AUTOMOTIVE PARTS—The Mechanics Universal Joint Division of Rockford, Illinois, is another unit of the Borg-Warner Corporation. Selection of Memphis, Tennessee, for a $2,500,000 automotive parts plant, however, was not related to the selection of a southern plant by the

Norge Division because the company divisions operate independently.

The need for expansion and a shortage of labor in the Rockford area caused the company to search for a new plant location. Transport savings were not important as compared to labor needs, so the company had wide freedom of locational choice. At first, a location was sought near the old plant. One of the local railroads was contacted and its industrial development department suggested Memphis as a possible location. In Memphis, the labor supply situation was checked by talking with officials of a number of plants. The new plant employs about 500 men and productivity has been satisfactory. Prevailing wage rates are somewhat lower in Memphis than in the North. An important secondary consideration was the low cost of natural gas. This will permit important savings because the company's manufacturing process requires a great deal of heat treating.

3. *Shoes*

The shoe industry in the South, which was not very large prior to World War II, has been greatly expanded in the postwar period. St. Louis has been one of the important shoe centers in the United States and the St. Louis shoe companies have recently established a number of plants in Arkansas, Kentucky, and Tennessee. Arkansas, for example, did not have a single shoe factory before 1945, but by the end of 1948 had acquired eleven sizable shoe plants. Nashville is the center of another, but smaller, shoe manufacturing region, within which several new shoe plants have also been established since the war.

Extension of the shoe industry from St. Louis into the South by the International Shoe Company and the Brown Shoe Company was a direct result of available labor supply. Also important was the fact that improvements in transportation, particularly highways, made it possible to integrate new southern plants with St. Louis operations. The pattern of manufacturing emphasizes accessibility to St. Louis. One company sets the limit for new locations at 300 miles from that city and the other uses the overnight trucking distance. As a rule, the desirable plant size is small. The 400 to 600 workers required, over 50 percent women, can be easily secured in small towns where wages are lower and where the communities are likely to render financial assistance. The work is not highly skilled and the United Shoe Machinery Corporation and other companies handle the training of employees as well as the supplying of the machinery.

The shoe companies are constantly being approached by mail or by delegations from aggressive communities. When new locations are de-

sired, field investigations are made and both labor supply and community leadership are closely checked. One company said that the best way of ascertaining the quantity and quality of available labor is by examining high school records. In the new plants, the starting wages varying in 1947 from 52½¢ to 57½¢ per hour proved high enough to attract excellent labor. Many of the plants of both International and Brown are organized by labor unions. Wage rates are fairly standard for all country plants but are higher in metropolitan plants.

All the shoe plants investigated received substantial financial assistance from communities through development corporations or other forms of community organizations. As a result of the keen competition among the small towns for new plants the companies for many years have been able to require financial assistance from the communities. For one company the policy is for the community to build the plant and lease it at a nominal rental; for the other company the community raises a cash contribution of about $100,000 and the company builds the plant. In both cases the companies guarantee a minimum annual pay roll, usually for about ten years. One company said that the professional men and businessmen who make the contribution are able to recoup their outlay in a few years out of the additional business they receive from increased community income.

The companies are much interested in the leadership of the community and one of the tests of good leadership was cited as "will they raise the money in such a way that it won't kick back." Good leadership was able to raise $80,000 in a town of 1,400 and the surrounding area, whereas the leadership in another town of almost 4,000 had difficulty in raising the required amount. It should also be mentioned that construction costs have more than doubled since the end of the war but the shoe companies have adhered to their prewar amounts as contributions for new plants.

4. *Textile Mill Products*

In the past, the manufacturing of cotton goods, primarily the coarser intermediate products, has been the most important type of textile production in the South. Yet in the postwar period, there has been only a small expansion of cotton textile facilities. Rayon and other synthetic yarn industries, on the other hand, have been tremendously expanded, and most of the new synthetic yarn plants have been located in the South. (Manufacture of rayon and synthetic fibers is a part of the chemical industry, discussed in the chapter on market oriented plants.) Since

the end of the war there have also been significant additions to the small woolen and worsted textile industry of the South.

New labor oriented plants representative of the following types of textile manufacturing have been included in this study: cotton goods, throwing mills, and woolen and worsted manufactures.

COTTON GOODS—The outstanding postwar locational development in cotton textile manufacturing has been the continued shift of activity out of the Northeast rather than an overall expansion of capacity. The two observed movements of plant facilities were by Clark Thread Company from New Jersey to Georgia, and by Textron, Inc., from New Hampshire to South Carolina. Generally mentioned as the primary reason for the relocation was the problem of labor supply in the old areas.

The only case investigated of a projected finishing plant and possible cotton mill was that of the Berkshire Fine Spinning Associates which purchased several parcels of land near Erwin in eastern Tennessee on the Nolichucky River for possible industrial expansion. The company operates 14 plants in three New England states, and this is the first time that it has reached outside New England. The company specializes in the manufacture of fine-combed cotton textiles.

Planning for the new plant in the South was prompted, according to the company, by the difficulties in securing additional labor for their New England mills. No matter what steps have been taken, it has been very difficult to secure the necessary labor, mostly female. In searching for a satisfactory community the concern had further difficulties in securing a plant site with an adequate supply of industrially suitable water and satisfactory disposal facilities. A consulting firm was employed to recommend a southern location. Erwin was selected on the basis of labor surveys which indicated a satisfactory situation with regard to efficiency, availability, and worker attitude. The local labor market had not been "spoiled" by other mills and there will not be any competition with other employers for the labor supply. In addition, the site is within 24-hour delivery time to more than half the nation's population.

THROWING MILLS—The expansion of textile throwing facilities is closely related to the growth of the rayon and nylon synthetic yarn industry. In fact, throwing is simply a process of strengthening the synthetic yarns by twisting, in preparation for weaving and knitting. Although some of the textile companies do their own throwing, a great deal of the work is done by plants specializing in this service. Some of the throwsters buy their materials and sell the finished product, and others operate on a commission basis for their customers who supply the raw materials.

Included in this study are two new throwing plants—the Duplan Corporation plant at Winston-Salem, North Carolina, and the Belding Hemingway Company mill at Morristown, Tennessee. Both companies emphasized the minor role of transport costs and the major importance of a female labor supply.

Without seriously considering other locations, Duplan selected Winston-Salem because the company was satisfied that an adequate supply of labor could be secured in that location. Duplan was familiar with the city because it already had a satisfactory operation in Winston-Salem. Particularly attractive was the possibility of minimizing training costs by transferring some personnel from the old plant and by training others in the old plant while the new facility was being completed. The plant will receive most of its incoming materials from the du Pont plant at Martinsville, Virginia, and ship the finished products to nylon hosiery mills farther south. In line with general company practice, truck transportation will be used exclusively.

The Belding Hemingway Company decided upon the South for its new plant largely as a result of the satisfactory experience at a Bedford, Virginia, plant which had been established during the war. Company officials were much impressed by the climate within 50 or 60 miles of the Blue Ridge Mountains as contributing to labor efficiency, an opinion shared by other manufacturers in the Virginia-Tennessee area. To investigate a number of possible locations, the vice president hired a friend to travel through this area. The choice of prospective towns was eventually reduced to two. Then the selection was made in favor of Morristown, because the other location was becoming crowded with new industry and because the city officials of Morristown were cooperative.

The Morristown plant is in the TVA area and the low cost of power has influenced the company to electrify the new plant completely. It was estimated that there would be a significant annual saving in electricity costs as compared to other possible locations outside of the Tennessee Valley.

WOOLEN AND WORSTED MANUFACTURES—Expansion of the woolen industry in the South since the end of World War II has probably been the most significant textile development in that region. Deering, Milliken, and Company began full operation in 1947 in three new woolen mills located in South Carolina. The new weaving, spinning, and finishing mills will provide employment for over 1,200 people. Another concern, the M. T. Stevens Textile Company, during 1947 established a new $700,000 woolen mill in Dublin, Georgia, and at the same time cut its operations in Rhode Island. In the same year, Pacific Mills

placed in operation a new $2,000,000 plant at Halifax, Virginia, and acquired a site near Brookneal, Virginia, for further expansion. A related type of manufacturing is the new $1,250,000 carpet yarn mill established by the Lees-Cochrane Company in Glasgow, Virginia.

These new woolen plants represent in part an increase in productive capacity, and in part a transfer of operations out of New England. As long as the demand for woolen goods remains at the high postwar level, all available capacity will be fully utilized. But if the demand eventually falls off, one company at least intends to curtail or close out some of its operations in the North.

The reasons given by the companies interviewed for expanding in the South were all related to labor supply and labor disturbances. Their policy of decentralization carries out the desire to have part of the company operations in a new area and outside of large, highly industrialized districts. Secondly, the establishment of new facilities in small southern towns often means that a manufacturer avoids competition for local labor. The limited employment opportunities in most of the southern areas make textile mill jobs attractive, whereas there is great difficulty in securing labor for textile mills in northern areas. Other reasons mentioned were: labor savings resulting from less absenteeism, lower turnover, and from securing a better class of labor because more labor was available; freedom from outside labor influences as the major factor in a location; and freedom from state labor law restrictions on women which prevented three-shift operations in the North. Although none of the companies interviewed in the textile industry had accepted special inducements from the communities, they were greatly influenced by the attitude of state and local officials. One official said, "The southern states are more receptive and are glad to have you."

SEVEN

Transportation

ALTHOUGH transport influences have entered into the previous discussion of markets and materials, the subject deserves separate consideration. At the outset, it is well to emphasize that wise selection of a plant location requires the attainment of two transportation objectives—low costs and satisfactory service.

Importance of Transportation

Among manufactured products the proportion of total delivery costs accounted for by transportation varies greatly. For comparatively bulky articles, especially those of low value, transportation costs may be large in comparison with the costs of the raw materials or even the costs of the finished articles themselves. For example, in locating its asphalt tile plant at Jackson, Mississippi, the Armstrong Cork Company was trying to minimize the sizable expense of moving a low-cost item to market. For more highly processed articles, on the other hand, costs of transporting materials into the plant and finished goods to the market usually constitute only a small fraction of total costs. Even for these articles, however, speed of transportation and regularity of service may be of real importance. In the case of the Monroe Calculating Machine plant at Bristol, Virginia, for example, there is no significant cost handicap to the company in hauling most of the materials and supplies from the Northeast to Bristol and in shipping the finished calculators back to the major market area because the value added to materials in the plant is the major share of the sales value; but the time requirement and the regularity of transportation service in and out of the plant were important factors in defining a favorable location zone.

Whether transportation is of great importance in a location problem sometimes depends upon how much of the manufacturing process is

included in a particular plant. In a highly centralized operation where raw materials are moved through several stages to completion, freight costs may be much less significant than in an assembly operation where the several components are obtained from other sources and merely put together. Thus, transport expenses are probably of less weight in determining the location of an integrated automobile plant such as the giant units in southeast Michigan than in selecting a center for a regional automobile assembly plant to which finished engines, chassis, and parts are shipped.

Where transportation costs are of major significance and competition among producers is active, a concern will try to minimize these costs by locating its operations where the total costs of assembling materials and delivering completed products are at a minimum. If concerns use different sources of materials and aim at somewhat different markets, competition may be less direct and the pressure on transport costs somewhat reduced. Yet transport costs must be kept down or competitors will widen their markets. In industries where there is little price competition, including the situation where the product can be differentiated in one way or another from similar products, the concern may locate its plants primarily with respect to assembly costs and handle the problem of delivery costs by adjusting the price to the final consumer. Or, in these semi-competitive industries, there may be less pressure to select a location where assembly costs are at a minimum, since the company does not face possible loss of sales or gross revenue by locating in a city more convenient to the management.

As already indicated, the quality and dependability of transportation service are sometimes of greater importance in the location of a plant than the achievement of the lowest possible transportation costs. Many of the concerns mentioned that the location of plants was conditioned upon the availability of regular shipments within certain time limits. As indicated in the previous chapter, several of the textile products firms wished to be within a short delivery time of the New York City market. Sometimes location in a city with several shipping schedules per day toward markets was considered a prerequisite. With respect to the branch plants of the big St. Louis shoe companies, location had to be within definite trucking or rail delivery time of St. Louis. Time was important for raw materials and supplies sent out from St. Louis, as well as for finished shoes brought back to St. Louis. The Brown Company loaded its truck trailers with raw materials in the afternoon for overnight delivery to the branch plants, and the shoes were returned to the St. Louis warehouses the morning of the second day. In such instances, good roads and reasonable state trucking regulations are major

elements in determining a favorable location zone around the home plant.

By and large, the two major transportation objectives are not inconsistent with each other. In most instances, transportation costs can be minimized and satisfactory service obtained.

Efforts to Minimize Transportation Costs

All plant location decisions are influenced more or less by efforts to keep the costs of transporting materials and products low. Before discussing these efforts it may be well to point out that exceptional situations in some industries may have a modifying influence.

To achieve production efficiency in other respects, the pressure on freight costs may be lessened. For example, in some old established industries, particularly those which are not highly integrated, a new unit may be located so that it can share in the external economies in existing production centers rather than with the aim of cutting transport costs. New metal processing plants, for example, are often placed in areas where the industry is already concentrated, even though the sources of materials or the market may have shifted. Within such an area, the new plant is assured of some external economies, especially with respect to specialized services, and also of a satisfactory competitive position with respect to other local producers. Unless transport costs bulk large in an industry, the influence of new materials and new consumers may not affect, for some time, the geographic pattern of production.

In the marketing of products, transportation from the plant may be at the customer's responsibility and cost. In such situations, the manufacturer may be less aware of the bearing of these costs on the selection of plant location. Some producers included in this survey in fact seemed to overlook this point. On the other hand, where the manufacturer sells articles on a delivered basis and handles the freight costs himself, a strong motive to consider these costs was noticed. The Goodrich location of tire plants at Miami, Oklahoma, and Tuscaloosa, Alabama, and the Johns-Manville location of an insulation board unit at Natchez, Mississippi, are cases in point.

Opportunities to reduce transport costs are primarily of three types—a decrease in the transportation movement, a lowering of rates, and a saving on service.

1. *Decrease in Transportation Movement*

In locating a plant, the total volume of freight movement can be reduced by holding down the weight and volume of materials and goods and by cutting the length of haul.

WEIGHT OR VOLUME—Whenever a great reduction in weight or volume occurs during the manufacturing process, the operation will usually be carried on near the source of the raw material in order to reduce the transport burden. Among the new southern industries one of the most common examples of weight reduction is in the making of pulp from wood. In this operation there is a reduction in weight of about 50–60 percent owing to the water and lignum content of the wood. Consequently, all the plants covered are located as close as possible to the raw material supply in order to save on physical movement and hence on freight costs. Naturally, a plant can draw on supplies from a greater distance where water transportation for raw materials is available. Incidentally, the great importance of assembly costs in this industry has stimulated the selection of high quality wood fiber of relatively low weight.

Within the mineral industry, a previously cited example of reduction in weight in processing is the production of elemental phosphorus. Since ten to fifteen tons of rock are needed for one ton of phosphorus, the processing plant must be located at or near the mine to cut down otherwise high costs of moving the material.

For agricultural products, weight reduction in processing is common. The most numerous cases in the present study are the milk processing plants. Location at the source is strengthened where the processing of farm products yields by-products which can be used locally. Thus, a favorable market for the by-products of meat packing and corn refining augments the pull of these activities to agricultural areas.

Volume of movement, in terms of space requirements, on the other hand, may be cut by location near the market, if the final product is of a space filling type. Even the total weight movement will be less when the plant is near the market if the process consists of adding quantities of generally available materials.

Sometimes, of course, a heavy weight movement is profitable if the material is of great value and if processing requires large amounts of fuel or other materials even more difficult to move. Ferrous and nonferrous ore movements are examples.

DISTANCE—In deciding to reach part of its market by establishing a branch plant, a concern is trying, among other things, to reduce the distance which its finished goods have to be moved to reach the market. Whenever the local demand will support an efficient sized plant, there

is an opportunity for a concern to cut down the length of freight haul by location within the area if the industry is one that can be placed advantageously at the market. Development of an assembly plant at a southern distribution center may involve a reduction in the total movement. This may mean a lower delivered cost on the final product than the total of assembly costs at an old production center in the North, plus the delivery costs on the finished article from that center. Automobiles are an example in point. An even more favorable reduction in the transport burden applies to the production of tires and tubes in the South. Southern locations have become more attractive owing to the use of synthetic rubber which can be obtained in the Southwest and to the southern origins of most carbon black and tire cord. The two new Goodrich plants in Oklahoma and Alabama were located partly because of the shorter transportation haul on synthetic rubber. Efforts to cut length of movement to the market may also apply to material based industries, whenever the required resources are available at widely separated sources, from which different parts of the market can be served. For example, a plant producing forest products for the New York area would save in transport movement by using pine in Virginia rather than pine in Mississippi.

BACKHAUL—Reducing or eliminating backhaul is a special case of cutting down on freight movements. It is usually another means of minimizing transport costs. In general, the least total transport cost will be incurred if the plant is located on the shortest transportation route (in terms of cost) from the source of materials to the market. For example, until recently a midwestern meat packing plant was importing cattle from the Southwest for processing and then shipping the finished products back into the southern market area. The cost of these products obviously included a great deal of unnecessary transportation. After the demand in the southern market became large enough to support an economic sized plant, the company established a local plant thereby eliminating considerable backhaul expense in supplying meat products to the area.

Another method of reducing backhaul consists in placing a plant at the edge of a large market area nearest to the source of materials. In this way, delivering the finished products does not require transport expense for moving over distance already covered by the raw materials. For example, the International Harvester Company located a new plant at Memphis, Tennessee to manufacture mechanical cotton pickers for the southern market. Memphis was preferred to a location farther South because it was in line from the Chicago source of materials and leading into the market.

A special opportunity to avoid backhaul arises from location at a breaking point in traffic, especially between land and water routes. Location on deep water was considered indispensable to the operation of several companies which moved bulky raw material into the plant and shipped finished products by water to markets on the East Coast or abroad. The location of manufacturing operations at the breaking point is economical in that it eliminates one extra handling of materials. Moreover, it has the further advantage of eliminating possible backhaul on products whenever plants are located in the marketing area for the main product. Thus, from Gulf petroleum refining plants, products can be moved to a number of different markets depending on the product and each shipment can take the most economical route. Moreover, if there is an important local demand for one of the products, or for some of the by-products, location on the Gulf has an additional advantage over location on the Atlantic Coast. Thus, for the Corpus Christi Corn Products plant, there is easy access to the Texas market for feeds and for dextrose. If there is likelihood of the geographic market pattern for a company's products changing, a location on the Gulf would allow an adjustment to the new situation more easily than could be made from a plant located within the orginal market area.

2. *Use of Lower Rates*

REDUCED MOVEMENT OF MORE EXPENSIVE COMMODITIES—Another means of reducing transport costs is by taking advantage of customary rate differentials. In most industries the transportation costs on finished products are higher than those on raw materials. These higher rates result mainly from the increased value of the product per unit of weight, an increase in space required per unit of weight, or an increase in fragility. Under such circumstances, the plant is pulled toward the center of the market; or if most of the materials come from one direction, the balance of the forces so far as transportation is concerned is likely to be between sources of materials and the center of the market.

In the production of automobiles, there is a great freight saving in establishing branch assembly plants in a region whenever the market is large enough. The pricing policy of the industry, that is to sell cars f.o.b. Detroit, undoubtedly encourages decentralization, particularly because there is a significant freight saving in shipping packaged parts over shipping the finished automobiles. These freight savings, of course, influenced the location of both the new assembly plants in the Atlanta area. An even more outstanding example of the influence of savings from shipping parts instead of finished autos is the development of

the assembly plants on the West Coast where cars are still sold f.o.b. Detroit.

Several other examples of locating plants in order to avoid high freight costs on finished articles were included in this study. In all these cases, the savings on freight and handling were important elements in locating plants near their markets.

BULK MOVEMENT OF LOW VALUE COMMODITIES—Where large quantities of low value materials have to be moved at low per ton costs, availability of water transportation may be an important element in plant location. Often only by using water transportation can the range of access be widened. Thus, a wood pulp plant can afford to obtain timber from a much greater distance whenever water transportation is available. Also the location is strengthened by the larger potential supply area. Moreover, when a plant has to obtain materials from a given source, and is to be located within a market area, it will give preference to locations on waterways if it is feasible to move parts and supplies by that means. For example, all new plants of the International Harvester Company can transfer materials by water.

In moving relatively bulky, heavy products to market, low-cost water transportation may be equally important in the location of some plants. Examples in this study include the Corn Products plant at Corpus Christi, the Southern Paperboard plant at Port Wentworth, and the Cities Service Refining plant at Lake Charles. If part of the plant production is for export, location at a port is of course very desirable. Many finished goods are less suited to water transportation because they are more easily damaged and therefore require special boxing and handling. Consequently, some of the concerns do not plan to use water transportation even though it would be available. In other instances, a concern selects a waterside location to serve an additional operation which it plans to develop later.

NEGOTIATION FOR SPECIAL RATES—Several of the concerns locating plants in the South found that the apparent transportation costs applying at certain prospective locations could be favorably adjusted after negotiations with public rail carriers. Paper rates, i.e., rates on the tariff books for commodities for which there has been no traffic, are of course often lowered when real rates are established. Special commodity rates on large volume movement can always be made available. Particularly is this true, if actual or potential water transportation is in the picture. Often a manufacturer remarked that competition among carriers was a good thing. A location with several railroads, excellent highways, and also waterways was ideal in this respect. Many possible industrial sites in the South are near actual or potential water routes.

Transportation Service

The aspects of transportation service which are of significance to plant location include special facilities, frequency of service, convenience of service, and time in transit.

1. *Special Facilities*

For movement of some materials and products special facilities are required. For coal, ores, and other heavy or bulky materials, the ability of rail lines or water carriers to provide these facilities at particular points has a real influence on selection of a location. Among the facilities are those for switching, holding, classification, storage, weighing, and other handling operations. Sometimes leased space is important. For finished products, special types of cars, trucks, or other carriers are sometimes required. Usually these can be made available equally well at a number of points, but larger communities are likely to have a decided advantage.

2. *Frequency of Service*

If it is appropriate to the types of goods to be carried, highway trucking usually provides frequent service from sources of supply and to markets. Several producers locating plants in smaller towns mentioned the advantage of trucking. In fact, in a few plant locations a rail connection has been considered unnecessary or of only secondary importance. Cases of this sort occur in the garment and shoe industries.

Frequency of service on rail lines is usually much greater in larger cities and at divisional operating points. Prospective producers found service better at these points in terms of car supply, particularly for special type cars, as well as in terms of frequency of train movement. In fact, location in cities on switching or belt lines was often desired in order to get ready access to train movements on a number of lines and not to be dependent on one carrier.

Where frequency of service was unimportant, location on small branch rail lines or on water routes often was adequate.

3. *Convenience of Service*

Wherever it is usable, trucking also provides great convenience in moving materials into a plant and finished products from the plant to the market. Movements can be made directly from plant door to

plant door or from plant directly to sales outlets. Several of the concerns included in this study indicated that, for short and medium distances, the availability of highway transportation played a considerable part in the selection of plant locations, particularly in choosing a site within a community.[1] As already indicated, the St. Louis shoe companies are able to integrate and schedule operations among plants much more effectively by means of highway transportation. An assortment of necessary materials is shipped by truck or rail to each plant, usually on a daily basis. One company loads a truck trailer for each plant with materials which are then delivered overnight. On the return trip the finished shoes are moved to St. Louis. Each plant specializes on a particular product which permits cost savings but also requires that mixed shipments of shoes to market outlets be made from a central point. In fact, whenever a plant is to supply semifinished materials or parts to another plant which wishes to avoid building up inventories, regular trucking movements are considered a "must" by some concerns in selecting a location.

Where the finished product is to be moved from the plant to a number of customers at different and comparatively nearby points, delivery by truck is much more convenient and economical than by rail. The operation of the American Can plant at Fort Smith, Arkansas, is an example included in this study. Availability of highways for regular and emergency distribution is effective for the most part only in terms of the final choice of a site within a community, since good highway facilities exist in all regions and states.

Most concerns reported that rail service was convenient and satisfactory for most transportation needs. Arrangements for regularity of service in spotting cars at plant sidings and in picking up outgoing shipments were usually made before final site selection.

For some of the new southern plants, location on waterways has led to regular and convenient shipments, particularly between suppliers of materials and parts and manufacturers. Careful scheduling of plant operations and of shipments has provided the basis for satisfactory, low-cost transportation.

4. *Time in Transit*

If the objective in selecting transportation service is to keep to a minimum the value of materials and goods in shipment, rapid trans-

[1] Transportation peculiarities may play an additional part in the location problem. Again the branch plant pattern around St. Louis is illustrative. If trucking were relied on, Kentucky was an undesirable area for new plants because of the restrictive trucking laws. If rail transportation were to be used it was thought wise not to locate in Tennessee. Rail rates from St. Louis are higher for a given distance in that direction because of the two river crossings.

portation is used instead of movement by water because of the shorter period of time that working capital is tied up in transit. Either rail or highway carriers usually provide rapid enough service. Some of the new southern plants have provided for rapid transport by highway over considerable distances, though for long hauls where time is a factor rail service is usually more satisfactory.

For operations where time is not a major factor in bringing in materials or in delivering goods, plant location may be affected by savings that can be realized by using a lower cost method of transport over a greater distance. For example, a producer in Cleveland stated that to reach a market in California it was cheaper to transport his product to the East Coast and then ship it by water through the Panama Canal than to ship directly by railroad. In his industry, as in some others, a producer in New Jersey would be "closer" to the West Coast than a producer in Cleveland.

5. *Passenger Service*

Several company executives indicated that an important element in selecting a new manufacturing plant location was the ease of access to general headquarters and to other plants of the concern. This was considered desirable to permit inspection trips of central office executives and to facilitate conferences among managers of operating plants. In one instance, a company president based the plant selection in considerable measure on the speed with which he could reach the plant from the company's general offices.

Railroad Rates and Service in the South

1. *Rates*

Very few instances were discovered where the location of southern plants was discouraged by relatively high rail rates on goods moved within the South. In several cases, rates were reported to be lower than in the North on comparable traffic and length of haul. This advantage results in part from competition from water traffic in a region with many water routes. Indeed, of the southern states, only Oklahoma has no access to water and thus gets little advantage from water-compelled rail rates. In the flat coastal and delta areas, competition from motor carriers also affects rail tariffs.

With respect to the comparatively high rail rates on shipments to northern markets, few producers mentioned that they anticipated any handicaps from southern plant locations. There were, however, a few concerns who indicated that the new freight rate decision putting the interregional class rates on a standard basis would strengthen the market position of plant locations recently selected in the South.

In the main, the companies included in this survey were large enough to arrange special commodity rates for the outward movement of the finished products and it was the common judgment that the railroad rate structure was no serious handicap in marketing finished products. Some concerns pointed out that if desirable they could move commodities into the Northeast by water or by truck.

In industries in which most of the production capacity is located in the South, it makes little difference to one concern whether the outbound freight rates are comparatively less favorable than those within northern rate territories. Thus, the Blue Bell Company, largest manufacturer of work clothing, pointed out that since their major competitors were in the South, they were subject to no particular handicap so far as rail rates were concerned, even under the old situation of class freight rates comparatively unfavorable to the South.

2. *Service*

Rail service in the South compares favorably with that in other regions, although a few producers noted that at some locations they had somewhat less frequent service than at northern plants in comparable sized communities. Certain deficiencies in other aspects of service were occasionally reported, but in no instance was a projected location turned down on this account.

Summary

The role of transportation in plant location is a critical one. Freight rates and traffic services set the framework within which a concern solves the problem of selecting the best place for the assembly of materials and the distribution to the market. The physical characteristics of a manufacturing process and the transportation aspects will often determine whether a plant is market or material oriented. Changes in freight rates,

particularly in rate differentials between materials and finished products, and changes in availability of service may in time considerably alter the geographical pattern in an industry. Readjustments such as these may well move in the direction of strengthening the ability of southern manufacturers to reach national markets.

EIGHT

Other Location Factors

IN ADDITION to the major location factors discussed heretofore, there are certain other secondary considerations which are involved in most location selections, usually in making the final choice among a few satisfactory alternatives. Occasionally a special local advantage in one of these considerations results in a marked shift in the location selected.

Capital and Bank Credit

So far as is known the concerns included in this study all have depended more or less on investment capital from outside the South. Most of these are large companies with headquarters in northern states—in part a reflection of the greater supply of capital in the North and of the influence of the New York money market. The few large southern companies covered in the study, however, had adequate available capital for expansion.

In one instance, the willingness to risk capital in new ventures appears to have had a considerable part in the transfer of part of an industry to the Southwest. The movement of a number of manufacturers of small private aircraft to the states of Texas, Oklahoma, and Kansas is the case in point. It is generally considered that one of the major reasons for the movement of these concerns from the Northeast was the willingness of capitalists, with funds obtained largely from oil production, to finance the small plane manufacturers, providing that their facilities were located in the Southwest. Other considerations, including particularly good climate for test flying, were of course involved.

The availability of bank credit, it was stated, was a factor in the location of certain processing facilities dependent upon farm products, the supply of which had to be developed and expanded. In these instances

the problem was one of furnishing credit, mainly working capital, to farm producers. Both the Kraft Foods Company and Pet Milk Company indicated that a successful location for processing facilities depended upon the willingness of local bankers to assist farmers in developing adequate milk supplies. Swift and Company pointed out a similar problem in connection with the development of broiler plants, although with respect to that operation, feed companies often supplied most of the necessary credit.

Management

Although the local availability of men to assist in the management of new facilities was rarely mentioned in connection with plant location, some concerns indicated that the communities selected must be ones in which the company could expect to find executive talent or to which it could expect to attract executives with the required training and ability. The attractiveness of the community and the climate were emphasized in this connection. For obtaining junior executive talent locally, a few company officials favored a city with a background in manufacturing. Management ability is, of course, highly mobile, but few companies wish to transfer an entire staff in from the outside and thus to have no local representatives included in management of the new plant.

Climate

Occasionally manufacturers mentioned that construction costs were somewhat lower in southern communities because of the warmer climate, although it was generally agreed that under present conditions, unit construction costs in the South had risen nearly to the level of that in northern states. Where a definite advantage for the South was claimed, it was related to the opportunity for year-round construction. A more important influence of the climate on plant costs was the ability of a concern operating in the South to use less expensive construction. These economies were emphasized particularly by concerns in the chemical and petroleum refining industries. Moreover, the economies were not restricted to initial construction but applied also to operation and

maintenance. Heating costs were generally lower. Shipping and deliveries were not interrupted by weather hazards, which sometimes interfered with shipments in the North. One concern emphasized that it expected a lower operating cost at its southern plant because of a reduction in packing and handling for its major product subject to freezing at its northern plant. Several manufacturers pointed out that the advantage which the South once had in lower living costs—partly as a result of climate—has largely disappeared, although, in their judgment, there is still enough difference to justify somewhat lower wage rates.

In a few cases, it was pointed out that there were certain disadvantages in southern weather conditions. Two concerns indicated that they had checked carefully the danger of tropical storms and hurricanes, and had located their plants away from the coast. One of these new plants was hit by the hurricane of October 1947, but was not materially damaged. Another handicap referred to was the excessive summer heat which required air conditioning, although the concerns involved pointed out that air conditioning more than paid for itself in increased labor output. One of the major aircraft companies, however, is reported to prefer operation in southern California to Texas partly because of the large cost for air conditioning in Texas.

Availability of Buildings and Sites

Four of the new operations included in this study—and several not included—were located in a southern community mainly because of the immediate availability of an adequate building. In two cases, the building was a surplus Government war plant. In several other instances where a new plant was to be constructed, the selection of one community over another in the same general area was explained primarily on the basis of finding a suitable site. So far as availability of adequate level ground in or near the city is concerned, most southern communities have an advantage over cities in the North. In a few instances this factor alone affected the choice between regions. Usually, however, availability of buildings or sites influences only the selection of a particular locality within a satisfactory zone.

Several of the companies, including du Pont, General Electric, and International Harvester, emphasized that they followed, as a general practice, the purchase of sites large enough to allow subsequent expansion if such expansion proved desirable. The need for a large site at

times narrowed the number of communities which could qualify for consideration.

Local Industrial Structure

The type and extent of industrial development within a community are often important to concerns in selecting a location, mainly in choosing the specific community. Some companies wish to establish plants in cities where manufacturing is well developed. Others prefer a community in which the new plant can attain a reasonably prominent position and not have its operations unduly influenced by practices in other plants. On this point, different attitudes have been expressed. A few concerns have sought communities with no previous industry. Many have avoided localities where competitors have plants. Others have preferred communities containing plants in the same industry. Where a concern has sought a community without any industrial production, the reasons have been in terms of avoiding competition for labor, particularly where a certain type of labor is required; for example, semiskilled women for mechanical operations in the electrical equipment and garment industries. In addition, some concerns have preferred to enter a non-industrial community with the conviction they could thereby obtain a higher degree of cooperation and enthusiasm on the part of local business as well as local labor.

Some concerns have restricted their search for a plant location to cities where the industries under consideration are already represented with the aim thereby of finding the right kind of skilled labor and the required suppliers and service trades. This action has usually been expressed as seeking external economies.

A negative factor of some importance was the avoiding of communities where competitors were located. If the plant is to sell to local or regional consumers, particularly to industrial users, the management is not eager to cover the same market unless it is a large market. Two firms, one making electric equipment and the other making paperboard, pointed out that they avoided otherwise desirable locations because competitors had recently located facilities there. The same policy is followed by food processing concerns because they do not wish to compete for a limited supply of farm products. Thus, a cheese company will ordinarily not locate in a small or medium sized agricultural community if another cheese company or even other milk processors are already

operating there. Moreover, these food processors will not locate in an area in which farm producers of the required materials are likely to revert to producing another farm product when its price rises. For instance, milk processors are cautious about entering a cotton growing area.

Where a concern prefers a community in which industries of a different type are operating, it has often planned to employ women in an area in which there are already adequate employment opportunities for men.

Several manufacturers have indicated that although they preferred, because of this and other reasons, to operate in a community with established industries, they would object to placing a plant in a community already dominated by one large factory. In other words, the company executives felt that to locate in a one-company town would limit the desired independence of their concern in dealing with the various groups in the community.

Size of Community

Among the concerns interviewed, there was a considerable variation in the size of community preferred. Where the prospective plant was to employ a large number of workers, the company usually expressed preference for a large city. This was explained in terms of labor requirements, both quantity and variety of skills, although availability of various supplies and services was also mentioned.

Probably a majority of the concerns preferred to locate plants outside of a large metropolitan area. These preferences were based mainly on avoiding high property taxes and on keeping away from labor disturbances which might affect labor generally within a large population area.

A medium-sized city of about 25,000 population was strongly preferred by two of the large concerns. These firms felt that a city of that size would furnish the necessary community facilities for their employees without involving the plant in any costs or difficulties which might arise in a larger area. There was a belief that a city of this size might be more cooperative and more efficiently governed, and at the same time have a lower tax rate, than a larger city.

It was somewhat surprising to find that several of the large concerns expressed a definite preference for plant location in small towns. In fact, in two of these concerns, there was a definite policy to avoid locating a plant in a town above a certain size, although occasional exceptions

were made. Preference for a small community was primarily a matter of the influence that the company would have in the town in selecting the labor supply, but also it related to the hope of developing efficient, satisfactory relationships with the city government and the community. The preference for a small community was always qualified to exclude any town already dominated by an existing plant because, as already indicated, under such situations, the company felt if its plant was relatively small that it would be likely to get the dregs of the labor market and also because such cities are "often controlled politically or otherwise by the dominating industry."

Centralization vs. Decentralization

Several concerns covered by the study were interested in scattering their plants over a wide area, rather than developing new facilities in an established area. In many interviews, there were references to the difficulties the tire industry had experienced in concentrating so much of its capacity in Akron. The policy of placing additional plants in towns in several different states was favored by many companies for two reasons: To get closer to various segments of the market and to avoid risks of concentration. The first point is fairly obvious and is a satisfactory locational policy when production requirements can be met at roughly comparable cost and in a number of widely operated locations. With respect to the second point, it was often emphasized that the risks of concentration were numerous. Primary emphasis was usually placed on the fact that large centers of industrial population were the focal points for labor troubles. Moreover, even though a company dealt with unions generally in all its plants in different cities, there would still be advantages in dealing with different labor unions or even with different locals. Both the decentralization of the tire industry out of Akron and the woolen industry out of New England were often referred to as indications of the desire to minimize the risk of labor troubles.

Other risks involved in concentration related to changes in state or local tax laws as well as to having operations tied up by railroad strikes, by fire, by floods, and by storms. With regard to the effect of state laws one chemical company has a policy of spreading its plants among the several states and observing a definite dollar ceiling for total plant investment in any single state. Chemical plants require large capital invest-

ments. Consequently property taxes are a relatively important cost of operation. With plants well dispersed, changes in the laws of any one state will not have too disastrous an effect upon the entire operation of the company.

Centralization, as opposed to decentralization, was favored by the shoe companies for certain of their stages of production and no doubt was of some importance in several other types of industry. Internal economies of large-scale production are achieved by purchase of raw materials, in large quantities. These are shipped to a central warehouse at low carload rates and then distributed as needed to the various plants in the district. Certain specialized operations, such as sole cutting, can be performed in a separate unit more efficiently than as part of the work of each of the plants. Other such economies of centralization are described in the case histories of the shoe plants. Aside from the shoe industry, however, there was little mention of the economies of centralization.

PART THREE

Governmental and Promotional Aspects

NINE

State and Local Influences

SELECTION of a plant location may be dependent in part upon the popular attitude toward industry, experience of industry with the state government administration, the nature of state laws, the operation of the local government, and the kinds of community facilities. In a few instances in this study, manufacturers indicated that the general conditions within a state were such as to cause plants to locate just across state lines in order to find a more favorable environment. Usually the selection of a state or community considered favorable to industry was a second step after the determination of a satisfactory area within which major requirements could be met. Some manufacturers with several plants indicated that they adopted the policy of selecting specific locations in "favorable" states but of not placing too many plants in a single state because of possible variations in state laws and administration at some future time.

Popular Attitude Toward Industry

In general, the companies consulted indicated that they were impressed by the favorable attitude toward industry which prevailed in the South. Company representatives were generally welcomed and both public and private groups usually favored increased industrialization. Many northern manufacturers drew attention to the concessions offered by southern states to attract plants as evidence of their genuine interest in having industry. Whether or not the manufacturer was interested in such special inducements was a different question and will be treated in the next chapter. Several manufacturers pointed out that the desire to obtain new industry was keener in the South and that this resulted in a public recognition of the value of industry to the region. In several in-

stances company officials mentioned with approval the conferences held with governors and other public officials on the need for a plant and the willingness of officials to cooperate in helping the concern establish a new facility. This assistance and often the accompanying publicity was generally appreciated. One concern referred to a dinner with the Governor of a southern state and added: "Imagine the Governor of ——— asking us to dinner."

In seeking a plant location, most managements were anxious to find a community where attitudes were favorable toward industry and where there was an active local leadership willing to assist the plant in developing its new operation. Several manufacturers indicated they had turned down a particular community—either in the North or the South—because it was industrially backward or unfriendly to industry.

Some manufacturers noted that as a rule, there was less friction with established activities and customs in developing a plant in a southern community than in a northern community, despite the fact that the plant often represented an entirely new type of business. As one manufacturer expressed it: "If we'd located this plant near our old unit at ———, we'd have run into all kinds of complaints from the city and nearby property owners. On the other hand, in going south to ———, we've been welcomed by local businessmen and praised as public benefactors."

Where local fears did develop over the reported introduction of a factory into the community, the help of friendly local leaders was often a big factor in the location decision. In one instance, where opposition developed on the part of particular groups in one community who were afraid of having the status quo disturbed, and particularly of losing their domestic help, the local business leaders were able to iron out the difficulties and secure cooperation on the part of business people and city government.

State Administration and State Laws

Some concerns included in this study emphasized the desirability of a friendly state administration. They were particularly impressed by states which had maintained favorable attitudes toward industrial expansion over a period of years. Continual changing of regulations with respect to industry was also viewed as burdensome. Some producers stated frankly

that in location selection they had sought jurisdictions allowing a wide discretion in matters relating to plant operation.

Two types of state laws were emphasized in connection with industrial expansion—labor regulations and tax provisions. With respect to the first, some manufacturers, mainly those in the textile industry, declared it was important to their operations to have some latitude in the laws with respect to hours of employment for women, a regulation usually less strict in the South. In general, there was some preference for a southern location because of more lenient wage and hour laws.

The importance of taxation varies among industries, although almost all manufacturers indicated there was some advantage in this respect in the South. Chemical manufacturers emphasized the particular importance of a low tax rate on property, because of the high investment per wage earner in their industry. One company indicated that it would stay out of certain states because the prospective tax burden was considered unfair. In the pulp industry, where companies usually purchase a considerable reserve of timber, the relatively more favorable taxation rate on standing timber was mentioned as a consideration in plant location.

In almost all instances, it was clear that companies had carefully compared the tax burdens in different states. When asked, officials readily commented on some states as unfair or as less favorable than others. Manufacturers indicated that sometimes for other reasons they located plants in a particular state despite the tax burden. A prospective manufacturer described the personal property tax in one state as "murderous." Another industrialist noted that although the manufacturing tax in the state containing his new plant was not severe, it was a considerable nuisance to calculate and to report.

Usually it was the magnitude of the tax that caused the manufacturer to drop consideration of location in a particular state, although with respect to two states, there were complaints of the tax costs having varied too much in recent years. In general, it is clear that northern companies consider the lower level of manufacturing taxes in the South an advantage in plant location. Usually the property tax was also lower, though there were a few notable exceptions. Yet most industrialists have not been led to shift attention away from a state solely because its tax burden is higher than that in a nearby state. As one manufacturer said, most places in the South are "decent" as far as taxes are concerned. Moreover, it should be emphasized that tax differentials are important in selecting one location over another only in the last stage of analysis when it is a question of picking one of two or three satisfactory localities.

Local Government

Among the concerns covered, all were interested in the costs and efficiency of local government. They were naturally more impressed with the cost and quality of the municipal services of fire protection, police protection, highway maintenance, and the like, than with the democratic representativeness of the government. In fact, one city, famous for its local boss and his political control, was considered by several companies an excellent plant location because of its stable, efficient local government. There were a few company heads who complained about local political corruption and expressed their unwillingness to locate plants in towns with such problems.

Especially important to a prospective manufacturer is the willingness of the local government to cooperate in extending services to the plant site. A community which is able to provide, without undue delay, additional roads, bus services, sewer and water connections, where these are not already available, is likely to obtain preferred consideration, particularly where the concern is in a hurry to get its facilities into operation. Several of the concerns covered in this survey pointed out that although they expected no gifts, they were influenced by the speed with which the city government could provide the usual community facilities. In the case of the Corn Products Refining Company plant at Corpus Christi, Texas, it was necessary for the company to obtain the cooperation of the local port commission in extending the ship channel to the site selected. Some plant locations involved an agreement with the county government to extend a public highway, including in one case, the construction of an expensive bridge.

In addition to municipal services, there was always the question of local taxes, including the bases on which authorities assessed property and the comparative tax rates among the cities under consideration.

Community Facilities and General Attractiveness

Manufacturing firms usually check on the adequacy of local community facilities, including housing, schools, recreational facilities. Of course, in recent years, few producers expected to find available housing for their staff. Some concerns, however, did look into the local costs of

housing construction, even though they did not propose to provide the housing themselves.

A community which is generally attractive and well kept was usually ranked fairly high as a possible location, though usually not at the expense of the more basic factors. When the concern plans to furnish a sizable proportion of employees from its home office, it is particularly interested in placing its plant in an attractive community. In fact, one of the larger concerns indicated that its policy was to locate a plant in a community where people wanted to live and not to place a plant, under any circumstances, in a town not having desirable living quarters. This concern had experienced difficulties in trying to keep its trained staff and employees at two of its plants located in "run-down communities." The executive, with whom the problem was discussed, felt that the other location requirements could have been met in communities satisfactory from the standpoint of living conditions. With respect to its new plants in the South, the concern checked carefully on the upkeep of the community in residential, as well as the business districts, and specifically looked into such matters as the school facilities, church facilities, progressiveness of civic leaders, and transportation within the community. Another manufacturer stated his company's objective in this respect was finding a "pleasant" town within which the major production requirements could be met.

TEN

Promotional Efforts and Special Inducements

STATES and localities often seek to attract industry on the basis of extensive advertising campaigns. These efforts may exert some influence on smaller concerns, but for the large manufacturing companies included in this survey, advertising campaigns are reported to have had little effect upon locational decisions. On the other hand, promotional efforts in furnishing data and in making surveys of the local availability of certain production factors appear to have been important in calling the attention of concerns to certain local possibilities, although it was generally stated that even these forms of assistance were minor elements in the final choice of the locality, useful as they often were later on.

Even the offer of special inducements is important mainly in obtaining consideration of a particular community within a zone determined to be satisfactory on other bases. A great deal depends on the degree of choice. A labor oriented plant probably is free to locate over the widest territory; consequently, in selecting a particular locality intelligent promotional efforts may be of considerable weight. For market based plants there may also be a zone of competition including several nearby cities among which promotional efforts and special inducements may play a part of some importance. For plants tied to materials, it was generally held that the sphere of operation of these influences is still more confined, partly because of variations in the quality of the materials at different points and partly because of the secondary influence of the market.

Locational Data and Surveys

Clearly, then, the promotional work which, as a rule, is most appreciated by manufacturers is the furnishing of data on local economic con-

ditions and occasionally the making of surveys of certain operating problems, such as sources of materials, freight rate schedules, or labor availability. The concerns included in the present survey often referred to the important information obtained from state agencies, particularly state planning and development boards, as well as from railroads and other utilities. The investigation of local conditions through a railroad or a utility was sometimes preferred because the industrialist could obtain information, often with respect to several possible production points, and still remain anonymous. It was, however, generally pointed out that an industrialist would check the recommendations of one railroad against those of another. A railroad was considered to be reasonably objective with respect to the advantages and disadvantages of different points on its line.

When a manufacturer furnished a list of basic requirements to a state development agency, the agency was often able to furnish helpful data about the state's resources. There was, for example, general agreement among producers who had used certain state planning boards as to the excellence of their assistance in supplying pertinent information. Some of the southern state agencies apparently have assembled much more complete data than others on sources of materials and supplies within the state and nearby areas. In a few cases prospective manufacturers were disappointed to find that the state planning board had no such information available. In particular communities under consideration for the location of a plant, such boards were occasionally used as sources of information. Usually, however, prospective producers preferred to get information on local industrial conditions from local manufacturers or other businessmen.

Aid in Getting Started

In selecting a plant location, an industrial executive may place some weight on the continued assistance from local public and governmental leaders, beyond cooperation in acquiring land and getting construction under way. Often the selection of a specific community within a satisfactory area is modified by anticipated aid in preparing for initial operation. Location of one of the largest plants included in the survey was influenced by the effective local services furnished, and to be furnished, in helping the company to arrange for its many production requirements. The aid continued after the location was announced. As the corporate official stated, in referring to a local official: "He makes things

right, not only before you locate, but after." When the company wanted anything, "he was the magician who waved his magic wand." One executive pointed out that with respect to his plant, the efforts of a local community leader in helping the company to obtain a site and speed up construction were in themselves enough to justify a considerable shift in the plant location, but not of course outside the zone satisfactory for meeting production and marketing requirements.

No doubt in some southern states the state and city agencies have furnished assistance which in many other communities would have to be obtained from consulting firms. This assistance at times is of a technical nature, but usually it appears to take the form of expediting the efforts of the company to obtain land or materials, or of arranging for compliance with local regulations.

Special Inducements

The great bulk of the concerns included in this survey pointed out that they received no special inducements whatsoever in selecting their plant locations. Usually, however, manufacturers accepted short-term exemptions from state taxes, wherever they were available to new industrial ventures. Corporate executives are generally convinced that it would be poor business on their part to accept any special concession from a local community. It was often indicated that to accept local gifts would make it more difficult to work in harmony with the community. Certainly, in one area covered in the survey, the producer who purchased his own site and supplied all the funds for his own building, has had smoother local relations than a competitor who accepted considerable local financial assistance. The president of a large southern chain of textile plants pointed out that he is not interested in local concessions because they lead to a feeling on the part of the townspeople that they own the plant and should have something to say about its management.

Another reason why manufacturers were usually not impressed by local concessions was that the offered grants consisted mainly of free sites or payments on buildings, which accounted for only a small proportion of total plant cost. Very rarely among the large concerns investigated did the site itself account for more than a few percent of the total plant investment and even where the building was included the cost was usually less than that for the machinery. Several manufacturers

indicated that it would be taking advantage of the local community to accept gifts because a gift could not affect the locational decision. One official of a large concern stated that in this respect: "Any worthwhile industry ought to row its fair share in the boat."

In addition, several manufacturers were definitely suspicious of prospective locations when they were presented primarily in terms of special inducements. On this subject one official stated: "They usually offer inducements where the location doesn't have much to offer." In three instances the firms accepted a local concession as evidence of the cooperation of the community and returned the funds to the community at the opening of the plant.

Although special concessions were generally condemned, there was a common agreement that the local communities should be more effective in furnishing adequate community services. As already indicated, the ability of the community to furnish these services promptly has had a measurable effect in the last stages of location selection.

Instances were encountered, however, where special inducements were accepted. Some were under the B.A.W.I. plan in Mississippi, where the state assists communities in financing new factory buildings. This is the main way in which it helps its cities to "Balance Agriculture with Industry." In two industries special inducements appear to be the rule. These are the shoe and the garment industries. In both of these industries the building constitutes the major proportion of the local investment. In the shoe industry, the machinery is generally rented.

The practice in the shoe industry of securing financial assistance from the locality takes two forms. In one, the community raises a given fund in addition to a free site and the company is free to apply the fund on the building or on any owned equipment, provided the plant is of an agreed size. In the other, the locality uses the fund to purchase a site and construct a building to which it retains title, but the property is leased to the company at a nominal rental. Until a few years ago, the fund raised by the community under either plan was enough to pay the total building costs, but since the war the contribution of the community has been restricted to about $100,000, and the company has contributed the remainder of the construction costs. This has been true even where the community retained title to the building. Under both these systems, the concern agrees to operate the plant for a given period of time, usually about 10 years and during this period guarantees a certain minimum pay roll. The two big shoe companies, International Shoe and the Brown Shoe Company, both emphasized that in almost all cases their pay rolls have far exceeded the guarantee. Each company justifies the subsidy by the importance of the indirect benefits to the commercial

and professional people of the community. Under these two systems of community grants for plant and site, the two companies report no difficulties with the local community, although it has been realized that difficulties might arise in a severe depression if pay rolls had to be cut below the guaranteed minima.

The garment industry is the other instance of plant locations involving free buildings or other local concessions, although the practice is not universal. At times the free building is a major element in location; at other times the availability of special financial assistance has been important. The garment industry employs substantially the same two systems used by the shoe industry in obtaining aid on plant quarters. In return there is a similar pay roll guarantee. A revealing situation occurred in one community which had obtained a garment plant in part by local contributions and which was trying to raise another fund for a shoe factory. When asked to contribute to the new plant, the garment plant refused.

With respect to tax concessions, manufacturers have rarely located a plant primarily to obtain the concessions, but where they are locating a plant in a state, such as Louisiana, which is promoting industry under this arrangement, these concerns usually apply for, and obtain the concession. Even in such situations, however, the manufacturer may decide to work out with the community an agreed evaluation and tax rate rather than apply for a tax exemption. One concern indicated that its experience in the past had led it to expect a relatively high evaluation after a period of tax exemption. It felt that future business operations would be on a more definite basis if the tax obligation was determined at the outset and consistently included as a business cost. Consequently, the company makes it a practice to reach an understanding with local officials, particularly the assessors, before plant construction is started, or even before the site is acquired.

If a state has a particularly annoying tax, or one that is nonexistent in other states, the company may make an effort to have the tax modified before locating its plant. In one instance, included in this study, the company official pointed out that the state law was amended to eliminate a particularly bothersome tax before the concern went ahead with heavy capital investment in that state.

At times a concern selects a particular site on the basis of obtaining a low assessment in advance or on the basis of having the site removed from the jurisdiction of some taxing authority. In one instance the city limits were altered to exclude a site before the concern reached a final decision to locate its plant in the community.

PART FOUR

Implications

ELEVEN

Applications to Industrial Development

THIS chapter presents some practical applications of the results of this study, which may be of use to local groups concerned with stimulating industrial development. These suggestions should be read along with the remarks in Appendix C on business practice in plant location.

Types of Industry Appropriate to a Particular Area

The location problem confronting the businessman is: For a particular type of industry and for a given market, where is the best place to put a plant? The problem confronting a development agency is: For a given area what types of industry furnish opportunities for successful plant locations? To a great extent the methods for solving the problem of the businessman can also be used by the development agency.

This investigation has concluded that the primary location factors are markets, materials, and labor. As a result, the plants studied have been classified according to one of these factors. It has also been emphasized that a particular type of plant will usually be attracted to a region by one of these primary location factors. For example, cheese factories will obviously be attracted only to those areas with a supply of milk. Automobile assembly plants are market oriented and will be placed only in areas with a sufficient market for automobiles. Textile plants are labor oriented and therefore their first location requirement is an adequate supply of workers. The significance of this classification in a development program is that the secondary factors, such as taxes, climate, sites, community living conditions, and service facilities, usually can exert an influence only after the manufacturer is satisfied that his major location factor can be found in the area.

The suggested technique for determining the types of industries likely to succeed in an area is to begin by studying the market, the material

resources, and the labor reserves of the area. The importance of materials and labor in attracting industry has been rather widely recognized but there seems to be great difficulty in ascertaining which plants are actually attracted by these factors. For example, the availability of cotton and wool will not necessarily attract cotton or wool textile plants. The effort of western wool growing states along this line attests to the needs for other location factors. An understanding of the major advantages to be achieved in selecting a location—securing immobile factors, transport cost savings, or production cost savings—should make it possible to determine whether particular types of plants are market, material, or labor oriented. The importance of markets as an attraction for industry has been greatly underemphasized in development programs. Consequently, there have been insufficient efforts to assess the market advantages of an area and determine which types of plants should be attracted by those advantages.

Nature of Development Work

Some development agencies have adopted rather passive development programs, trying to be as helpful and as persuasive as possible to the new plant prospects when and if they happen to appear. This approach may be necessary because of the limited availability of funds. It may also be explained by the lack of experience and techniques for planning any different kind of program. If an agency first makes an inventory of its locational attractions, and second, by the techniques suggested, determines the specific types of plants for which it offers the greatest advantages, its development efforts, as some agencies have discovered, may become more effective. Instead of using the shotgun technique of general advertising, the agency could then concentrate its efforts on securing those types of industries suggested by local resources. It would be able to approach existing companies operating in those industries and present a persuasive business argument. Or if the interest is that of a new enterprise, the agency could be in a position to discuss the bearing of local resources on the proposed industrial venture.

In order to impress a prospective producer with the advantages of local resources, a development agency should be able to present to him comparative costs of getting together the required elements in production. Such briefs can be prepared only by men having familiarity with the industry under study. The locational procedures followed by certain

large companies—such as those discussed in Appendix C—may be of guidance to local agencies in fitting their efforts in with company needs.

Promotional Efforts and Special Inducements

There is a strong desire in many areas to attract or stimulate new industry and this desire has often been accompanied by the expenditure of a great amount of effort. The problem confronting most of these groups has been: What can we do? Some of the most common actions have been to offer special inducements through tax exemptions, free sites, and factory buildings at nominal rentals. The great emphasis on such means may be explained largely by the failure to develop the information needed for a more effective approach. This study has indicated the limited influence of special inducements on location of branch plants of large manufacturing concerns and has attempted to explain that special inducements play a successful role only if the primary attraction exists in an area. And often in that case they are not necessary. It became clear during the survey that many companies locating plants in a state granting special aid would have come to the state anyway. A greater understanding of the basic elements involved in industrial location should lead development groups to devise techniques which would emphasize the resources strength of an area and the significances of these resources to prospective industrial operations.

Wage Policy

Another bearing of this study on promotional work is in the field of wage policy. It has been urged in some quarters that a federal minimum wage law should permit lower wages to be paid in the South. The argument is that the South needs low wages to attract new industry and that it must make this sacrifice because it needs industry so badly. The results of this study indicate that labor is only one of three major factors which attracts industry to the South. In the postwar period the attraction of the South as a market and as a source of materials has been responsible for the bulk of the new industry. It has also been pointed out by manufacturers entering the South that where labor was the major

attraction, there have been labor cost savings, aside from wage differentials, because of lower turnover, less absenteeism, and high productivity. Search for a certain wage rate advantage will now and then be the main interest of a producer, but it is no longer necessary to base promotional efforts on low wage rates, as many of the southern development groups are realizing.

Finding the Prospects

During this study the secretary of a development group complained, "What we need is more prospects." For larger plants, existing companies appear to have been almost the sole source of prospects. Their number is naturally comparatively small. But even for smaller plants there appears to be a real shortage of new enterprises. This shortage indicates either that the opportunities are hard to discern and evaluate for those outside of the industry, or that special obstacles exist for new firms. A well-rounded development program should provide for encouragement of new local firms as well as a procedure for influencing the location decisions of existing companies. The circumstances which influence an existing company to establish a new plant have been outlined in some detail. It has also been pointed out that unfamiliarity with the locational problems and techniques has often resulted in poor business decisions, partly because businessmen have overlooked certain of their requirements and the varying capacities of particular localities to meet them. This lack of background on the part of businessmen permits a greater role to be played by an agency which is well qualified to handle problems of industrial location.

Will to Industrialize

Many manufacturers have emphasized the degree to which they were welcomed in southern communities and the excellent cooperation they have obtained in locating and organizing new manufacturing establishments. The economic and political leaders in the South have become convinced that the development of industry represents the most important possibility of raising the standard of living and creating wealth.

Throughout the South, producers have been impressed by the availability of labor eager to learn industrial techniques and by the cooperative efforts of local businessmen. These attitudes have been particularly evident where the new plants represented new types of activity and where the wage rates were comparatively high. The developmental efforts of state agencies must be judged against this background. Most of the help given to outside industries in finding sites, in obtaining sources of materials and services, and even in financial assistance, has been offered in the hope of initiating activity which it was felt would increase the local standards of living and provide a basis upon which further industrial expansion could be built. The more intelligent this promotional effort, the greater the contribution to future incomes.

TWELVE

Conclusions

THIS chapter is intended to discuss the significance of the industrial changes that are occurring in the South and their relation to those in other regions and, in addition, the contribution of the South's industrial expansion to the economic strength of the country.

National Prosperity and Inter-Regional Competition

The interdependence of regional and national prosperity is often overlooked by those interested only in promoting the industrial health of one area. Prosperity for the country, such as that experienced in the recent postwar period, means many new prospects for all areas but depression means few, if any, prospects for any area. This is of the utmost importance. Too often development programs are based on an assumed rivalry with other areas. Take for example, the relation between New England and the South. Many agencies in New England appear to feel that their region is likely to be injured by industrial expansion of the South. Our survey indicates that three-fourths of the new southern plants investigated were attracted to that region in the postwar period by the market and by materials. Only two or three of these new southern units—those based on forest products—could have been placed in New England. Competition among regions for material oriented plants is restricted to those regions with surpluses of the same materials, placed at roughly equal distances, in terms of costs, from a specific market. With respect to market based plants, each region or area attracts its own. Only in the case of labor oriented plants, principally in the fields of shoes and textiles, do the South and New England actually compete for the same kind of capacity.

Overshadowing this small area of inter-regional competition is the greater area of common interest among regions in the continued prosperity of our entire economy. Periods of prosperity give birth to new industrial facilities, the location of which the development agencies try to influence. The community of interest that all regions have in maintaining an expanding economy completely eclipses the imagined opposing interests.

Real Advantages for Industry

The locational factors which have attracted industry to the South since the war and which have furnished the basis for a great increase in industrial production, based on both local and outside capital, represent real economic advantages and not just subsidies or promotion. These advantages for new industry have consisted in large measure of growing regional demand for manufactured goods, of undeveloped resources which were immediately available for use and which were often more economic than the unused resources outside the South, and of poorly utilized reserves of labor.

As the size of the southern market grew, it provided opportunities for new producing units in the industries already well represented in the South and also in industries which had neglected the South because the concentration of buyers had been insufficient to support plants of economic size.

The delay in developing southern resources has been due to a number of factors, including lack of information, inadequate technical knowledge, inadequate local capital, as well as the availability of alternative resources which were more accessible to established manufacturing centers. Perhaps the greatest overall force stimulating industrial development in the South since the war has been the pressure on the nation's resources. Peak business conditions have brought industrial requirements for resources to levels in many of the major industrial regions of the Northeast well above the capacity of established sources of supply.

Southern labor came to be recognized during the war and postwar periods as able to staff plants requiring skills long thought to be a peculiar resource of old established industrial regions. Moreover, the availability of large labor reserves eager to participate in industrial operations was an additional attraction to certain types of industries.

National and Regional Advantages of Southern Industrial Development

The postwar expansion of industry in the South has been of economic advantage to that region and to the country at large. This broader industrial base represents a significant expansion in local productive activity and a sizable contribution to the increase in total national output of manufactured goods.

The location factors which have been responsible for the expansion of industry in the South represent important national assets.

Of first importance is the increase in total output of goods. If the location factors in the South had not been favorable to industrial expansion much of the increased output in that region might have been lost to the nation. This is obviously true of plants producing for the southern market, since without that market there would have been no plants. But it is also true in great measure, with respect to plants producing either for the outside or for the entire national market. Some of this group of plants, based on local materials and labor, would not have been located elsewhere because the required production factors were not available. Even where resources were available in the older manufacturing areas, they were sometimes of marginal value and could have been developed only at higher economic costs. It should also be emphasized that increased production in the South not only means a greater national output but it may also mean a greater market for the producers in other regions and a stimulus to new capital investments in those regions.

Aside from the increase in production, southern industrialization has led to promotion of inter-regional trade based to an increasing degree on regional advantages in production. This greater geographical specialization has meant lowered average costs for consumers inside and outside the South. To the extent that producers have used low-cost southern resources in place of higher cost resources elsewhere, there has been a gain in national efficiency.

Even the use of low-paid labor in manufacturing in many southern communities represents a considerable national gain because it sets up a chain of developments which leads generally to greater efficiency and greater output. In so far as those workers come from even poorer income producing work in agriculture or in trades or from idleness, there is a definite gain. Moreover, even if they displace workers elsewhere, as textile workers in New England, these latter workers are freed to work in more

skilled operations for which their experience has fitted them. After a period of readjustment there is likely to be increased income produced in the northern communities involved.

With respect to the advantages of industrial expansion to the South, it is significant that the new production represents in many instances a filling in of the local industrial structure. Thus many new producers furnish parts, supplies, and equipment for older industries and thus strengthen the economic structure of the region.

In some respects, the material oriented plants assume a special position because of the ways in which they bring income to the farmers, lumbermen, and other providers of materials, who have long constituted the base of the southern economy and who have been largely dependent on outside processors. Of course the market and labor based industries have also been necessary in adding different elements to the regional economy.

This type of development actually repeats the economic history of the industrial Northeast. The rounding out of the industrial structure is a natural part of the cumulative effect of industrial development. A wider, more diversified, industrial base is of advantage to both business and labor, because it indicates greater opportunities for capital investment and business management on the one hand, and for work opportunities and higher standards of living on the other.

Future Prospects

The forces responsible for attracting industry to the postwar South are still operating. There remain large reserves of resources and labor which can be brought into industrial use. In addition, the expanding southern market can be expected to support many additional plants in the consumer goods industries. And as industrial production expands, there will be further opportunities for related industries to furnish materials and supplies to the older forms of production. The development of greater industrial experience on the part of labor and management is also a factor working toward a more varied structure of manufacturing activity.

Needs for industrialization, by no means, have been fulfilled. The South still has the handicap of below average incomes. Moreover, within the South some sections have remained behind others. By and large,

these are sections which have lagged in industrial growth. Among the areas most in need of further economic development are those where the presently developed resource base is weakening, those still dominated by one form of agriculture, and those dominated by a low income producing branch of manufacturing. This imbalance within the South needs to be remedied in order to strengthen the economic structure of the region and the nation.

Appendixes

APPENDIX A

Plant Locations Included in the Study

Criteria for Selection of Cases to Study

The first step in selecting the cases to be investigated was to compile a master file of the more important new plants located in the South since the end of World War II. Use was made of business publications, reports published by the several state agencies, and announcements by the Civilian Production Administration, the approval of which was required for all construction until June 30, 1947. Expansions of existing plants were not included, the theory being that such expansions involved a different type of decision from the one involved in selecting a location for a completely new plant. The question of expanding an existing plant versus building a new plant has been discussed, however, in Chapter Three.

The individual cases to be studied were selected from the master file according to the criteria listed below.

1. *Size*—Fully nine-tenths of the new plants investigated represent investments of $100,000 or over. The exceptions were, primarily, cheese, acetylene, and oxygen plants, which are customarily small in size. The reasons for using this size limitation were threefold. First, in view of the high postwar costs of construction, most important plants cost much more than $100,000. Secondly, it was assumed that the larger plant investments would be based on a more thorough investigation and would therefore represent well developed plant location techniques, particularly where large manufacturing companies were involved.
2. *Geographical location*—Each of the thirteen southern states is represented by at least three new plant locations in order to examine any geographic variations within the South in the importance of the several location factors.
3. *Industry*—All of the major industry groups, except tobacco, are represented by the cases selected for study. In this way variations in the importance of location factors and techniques according to type of industry are covered. A special effort was made to include the types of industries

considered important in providing a better balance within the economic structure of the South. Such industries are:

A. Those based on a new land-use pattern, such as dairying.
B. Those using highly skilled workmen, such as machinery.
C. Those not previously located in the South, e.g., corn refined products.
D. Those previously existing in the South but expansion of which is desirable, e.g., pulp and paper.

4. *Time*—The large majority of the cases selected are plants which have been located since the end of World War II. This emphasis on recent decisions should reveal the postwar importance of the various location factors.
5. *Southern capital*—The cases selected on the basis of the above criteria turned out to be predominantly plants owned by northern companies. In order to secure more information on the operations of southern concerns, a special point was made to include some additional southern enterprises.

A summary of the new plant locations included in this study, classified by industry group and by state, is shown in the tabulation below.

New Plant Locations Included in Southern Location of Industry Study

Town	*Company*	*Product*
	ALABAMA	
Coosa Pines	Coosa River Newsprint Co.	Newsprint
Decatur	Wolverine Tube Division, Calumet & Hecla Consolidated Copper Co.	Copper tubing
Oneonta	Blue Bell, Inc.	Overalls
Tuscaloosa	The B. F. Goodrich Co.	Tires & tubes
	ARKANSAS	
Bald Knob	International Shoe Co.	Sole cutting
Batesville	International Shoe Co.	Shoes
Bentonville	Kraft Foods Co.	Cheese
Conway	International Shoe Co.	Shoes
Fort Smith	American Can Co.	Cans
Little Rock	Westinghouse Electric Corp.	Electric lamps
Pocahontas	Brown Shoe Co.	Shoes
Russelville	International Shoe Co.	Shoes
Searcy	International Shoe Co.	Shoes
	FLORIDA	
Cantonment	Florida Pulp and Paper Co.	Pulp & paper
Cantonment	St. Regis Paper Co.	Paper bags
Cantonment	Alabama Pulp & Paper Co.	Pulp & paper
Jacksonville	Bemis Bro. Bag Co.	Textile bags
Tarpon Springs	Victor Chemical Works	Phosphorus
	GEORGIA	
Atlanta	Sherwin-Williams Co.	Paint & lacquer
Atlanta	E. I. du Pont de Nemours & Co.	Paint & lacquer
Atlanta	General Motors Corp.	Buick-Oldsmobile-Pontiac

GEORGIA (*cont.*)

Town	*Company*	*Product*
Buchanan	Cluett-Peabody & Co.	Arrow shirts
Chamblee	Boyle-Midway, Inc.	Household chemicals
Doraville	U. S. Envelope Co.	Paper products
Gainesville	Swift & Co.	Broilers
Hapeville	Ford Motor Co.	Ford automobiles
Macon	Armstrong Cork Co.	Insulation board
Port Wentworth	Southern Paperboard Corp.	Pulp & liner board
Washington	Pet Milk Co.	Dairy products

KENTUCKY

Lexington	General Electric Co.	Auto headlights
Lexington	General Electric Co.	Glass
Louisville	International Harvester Co.	Farm machinery
Richmond	Westinghouse Electric Corp.	Miniature lamps

LOUISIANA

Lake Charles	Cities Service Co.	Petroleum refinery
Lake Charles	Cit-Con Corp.	Lubricating oil
Lake Charles	Swift & Co.	Meat packing
New Orleans	International Harvester Co.	Twine

MISSISSIPPI

Gulfport	Sterling Drug, Inc.	Phillips Milk of Magnesia
Houston	Rice-Stix Dry Goods Co.	Men & boys' underwear
Jackson	Armstrong Cork Co.	Asphalt tile
Jackson	General Electric Co.	Fluorescent lamps
Jackson	General Electric Co.	Glass
Jackson	The Linde Air Products Co.	Acetylene gas & air products
Jackson	Mississippi Products Co.	Radio cabinets and furniture
Jackson	Swift & Co.	Meat packing
Laurel	Woodall Industries, Inc.	Masonite products
Natchez	Armstrong Tire and Rubber Co.	Tires
Natchez	Johns-Manville Corp.	Insulating board
Water Valley	Rice-Stix Dry Goods Co.	Work clothes

NORTH CAROLINA

Asheboro	National Carbon Co.	Batteries
Charlotte	The Linde Air Products Co.	Acetylene gas & air products
Charlotte	National Carbon Co.	Batteries
Goldsboro	General Electric Co.	Radio tube lead wires
Greensboro	Gaylord Container Corp.	Cardboard containers
Greenville	National Carbon Co.	Plastic products
Hickory	Gaylord Container Corp.	Paper boxes
Winston-Salem	The Duplan Corp.	Textile throwing mill

OKLAHOMA

Altus	Kraft Foods Co.	Cheese
Hollis	Kraft Foods Co.	Cheese

OKLAHOMA (cont.)

Town	Company	Product
McAlester	Seamprufe, Inc.	Women's apparel
Miami	The B. F. Goodrich Co.	Tires

SOUTH CAROLINA

Charleston	Ready Foods Canning Corp.	Dog food
Florence	American Lumber & Treating Co.	Treated lumber
Rock Hill	Celanese Corp. of America	Synthetic yarn

TENNESSEE

Bolivar	International Shoe Co.	Upper leather tannery
Bristol	Monroe Calculating Machine Co.	Office machines
Chattanooga	Norge Division, Borg-Warner Corp.	Refrigerator compressors
Chattanooga	E. I. du Pont de Nemours & Co.	Nylon yarn
Erwin	Berkshire Fine Spinning Associates	Cotton textiles
Memphis	Mechanics Universal Joint Division, Borg-Warner Corp.	Automotive parts
Memphis	International Harvester Co.	Farm machinery
Memphis	General Electric Co.	Auto & Christmas tree lights
Morristown	Belding-Hemingway Co.	Thread throwing
Nashville	Ferro Enamel Corp.	Enamel frit
Portland	Kraft Foods Co.	Cheese
Savannah	Brown Shoe Co.	Shoes
Selma	Brown Shoe Co.	Shoes

TEXAS

Corpus Christi	Corn Products Refining Co.	Syrup & corn by-products
Dallas	Armstrong Cork Co.	Bottle caps
Dallas	Curtiss Candy Co.	Candy & food products
Houston	Westinghouse Electric Corp.	Electric motors & machinery
La Porte	E. I. du Pont de Nemours & Co.	Livestock remedies & crop-saving chemicals
Liberty	Texas Gulf Sulphur Co.	Sulphur
Orange	E. I. du Pont de Nemours & Co.	Nylon salt

VIRGINIA

Brookneal	Pacific Mills	Worsted textiles
Halifax	Pacific Mills	Worsted textiles
Martinsville	E. I. du Pont de Nemours & Co.	Nylon yarn
Richmond	E. I. du Pont de Nemours & Co.	Sulphuric acid

APPENDIX B

Check List for the Study

I. Background for plant expansion or relocation
   A. Reason for expansion
      1. Increased general demand for old product
      2. Increased regional demand for old product
      3. Expansion into new products
      4. Expansion into new domestic or export markets
   B. Possibility of expansion of old plant, expansion elsewhere, and relocation of all operations
      1. Resource limitations in present location
      2. Lower costs and better competitive position
         a. Changing technology
         b. Advantages of using branch plants
         c. Need of space for expansion
      3. More advantageous location in relation to markets
         a. Old markets
         b. New markets
      4. To avoid local restrictive practices
         a. State laws
         b. Local laws and regulations
         c. Labor groups

II. The locational process
   A. Personnel responsible for locating plants
      1. Company employees
         a. Executive—background and assignments
         b. Working level—background and assignments
      2. Outside consultants
         a. Management firms—background and assignments
         b. Local and state development agencies—background and assignments
         c. Railroads, power companies, etc.—background and assignments

B. Requirements for new plant and their relative importance
   1. Raw materials
   2. Power and fuels
   3. Water supply
   4. Transportation
   5. Labor
   6. Financial
   7. Management and technical
   8. Access to market
   9. Relationship to established concerns
   10. Community attitudes

III. Main factors in selecting plant location

A. Raw materials
   1. To what extent immediately or potentially available
   2. Assembling costs
   3. Raw material reserves
   4. Quality of raw materials available
   5. Disposal of raw material by-products

B. Power and fuels
   1. Immediate or potential availability of electric power, coal, gas, oil, coke, wood, and waste fuels
   2. Power and fuel costs at the plant
   3. Disposal of fuel by-products

C. Water
   1. Immediate or potential availability of adequate supply of proper quality water
   2. Water costs

D. Transportation
   1. Availability of water, rail, truck, and air transportation with relation to plant site
   2. Cost of transporting raw materials
   3. Shipping costs to markets
   4. Possibilities for arranging special commodity rates
   5. Local transportation facilities for material and personnel
   6. Adequacy of highway facilities for company's own transportation

E. Labor
   1. Immediate or potential supply of labor
      a. Total labor force within commuting distance
      b. Availability of required skills
      c. Male-female supply
   2. Facilities for training personnel
   3. Wage rates and labor costs

4. Extent and character of unionization
   a. Local history of labor relations
   b. Labor attitudes to technological changes
   c. Community attitudes
5. Extent of labor market domination by other industries

F. Financial
1. Availability of local capital
2. Adequacy of local banking facilities

G. Management and technical
1. Availability of management and supervisory personnel
2. Availability of technical personnel
3. Availability of testing and research facilities
   a. Business institutions
   b. Educational institutions

H. Marketing
1. Economic relation to market or main marketing center
   a. International
   b. National
   c. Regional
   d. Local
2. Future trend of markets in relation to location
3. Availability of marketing services and specialists
4. Relation to competitors
5. Geographical location and pricing pattern

I. Relationship to established concerns
1. Relationship to other plants of same company
   a. Ability to integrate plant into company production pattern
   b. Possibility of interchanging personnel and materials by company
2. Relationship to plants of other companies
   a. Availability of other companies as source of materials or as outlet for production
   b. Economies of specialized service owing to existence of manufacturers locally within same industry
   c. Domination of community by some established concerns
3. Corporate interrelationships

J. State governmental influences
1. Tax structure
2. Minimum wage and hour laws
3. Workmen's compensation
4. Laws of incorporation
5. Incentives to new industries
6. Attitude of legislators and government

K. Community influences
   1. Housing
   2. Local government attitudes and local business attitudes
   3. Physical attractiveness
   4. Fire protection and insurance rates
   5. Social structure
   6. Recreation facilities
   7. Community spirit and progress
   8. Special inducements
L. Building
   1. Costs for new construction
   2. Use of old plants
M. Site
   1. Costs of building
   2. Space for expansion

IV. Sources of data on alternative locations
A. Method of gathering data
   1. Letters of inquiry to agencies interested in securing plant
   2. Personal trips
   3. Inquiries to people within organization
   4. Use of government and trade publications
   5. Other
B. Sources of data
   1. Railroads
   2. Public utilities
   3. State or regional agencies
   4. Local agencies
   5. Banks
   6. Trade associations
   7. Federal Government
   8. University research bureaus
   9. Other
C. Availability of data
   1. Types of data readily accessible
   2. Types of data not readily accessible
   3. Types of data not available

V. Process of final selection
A. Narrowing the choice
B. Final selection
   1. Comparative rating of factors
   2. Summary of advantages and disadvantages
   3. Comparison of profit and loss estimates

APPENDIX C

Business Practice in Selecting a Location

The procedure for selecting a plant location varies greatly from company to company and among different industries. The thoroughness of the locational process depends upon the experience and competence of the personnel responsible for the plant location work, the amount of the time available for making the decision, and the importance to a company of the advantages of location. Despite these variations, however, there is a general pattern of location procedure.

Personnel Responsible for Location Work

Although most plant location decisions involve the investment of an important fraction of the company's assets, the quality of such business decisions is sometimes surprisingly poor. This is undoubtedly explained by the fact that many businessmen are not frequently faced with the problem of selecting a new plant location and, therefore, have little experience in such matters. On the other hand, many larger companies and some of the smaller companies which have required the frequent establishment of new plants have been able to do an outstanding job.

It is sometimes said that many plants are irrationally located according to the whims of company executives or their wives. None of the new plants included in this study can be that simply explained. In the few instances where such personal factors may have been important, the location of operations one place or another did not have a great influence on the company's costs, or these non-economic influences came into play only in the final stage of the decision where the choice was between several locations almost equally satisfactory from the standpoint of more rational considerations.

Some companies regard the selection of a plant location as a specialized task and, therefore, engage outside consultants to perform part or

all of the location work. The more usual practice, however, is for the company to handle the problem within its own organization. In one case the board of directors of the company wanted to hire an engineering firm to select the location and design the new plant. The general manager objected, however, and told the directors that if he was to be responsible for the success of this new plant, he also wanted to select the location. The directors acceded and the general manager performed an outstanding job in locating the new plant.

Outside consultants were employed in only six of the cases studied. In three of the six instances the consultants were delegated the entire responsibility for making the investigation and recommending the location. In a fourth case, the consultants were called in to check the location decision arrived at by the company itself. In two other cases the experts were used to locate a satisfactory source of pulpwood but the specific plant location was selected by company officials.

Officials of one company committed to the policy of using location specialists said that in the past they had located a plant "the easy way"—on the basis of available factory space and cheap labor—and from the bad results of that experience they had learned the value of having such jobs done by experts.

Only a few of the companies have full-time plant location experts on their staff. The Celanese Corporation of America and E. I. du Pont de Nemours & Company, for example, frequently consider industrial expansion plans and, therefore, have permanent staffs concerned with problems of plant location and industrial development. Most of the companies, however, organize a special committee composed of the representatives of the interested departments or appoint one company official to handle each major expansion project as it arises, without providing for review by a special executive staff. In the larger companies, a vice president in charge of manufacturing often is responsible for the establishment of new plants, whereas in the smaller companies, the president himself may be directly responsible for plant location investigation and decisions.

Preliminary Analysis

1. *Market*

The actual procedure for selecting a location begins with an analysis of the extent and location of the potential demand for the output of the

new plant, the detailed requirements for operating the plant, and pertinent company policies. On these bases, a general area is selected. By market research the concern usually derives estimates of the quantity of products which can be sold under various conditions of demand and the geographical distribution of the prospective customers. A new plant will be considered only when market research reveals sufficient demand to support an economic sized plant. Before proceeding with the location problem the company decides whether the new plant is to supply an export, national, regional, or local market and the exact location of this market.

Where a company has more than one plant, the total potential market a company hopes to reach will be divided among the several plants. As an example, an insulation board company had only one plant near the East Coast, which had been supplying the national market. When the demand for the product had increased to the point where another plant was necessary, the company divided the total market and looked for a new plant location from which the midwest and far west share of the market could be handled. In each case there is a definite market territory to be supplied by a new plant and this market is a fixed factor in the location problem. In order to understand any plant location decision the market involved must be known.

The concentration of the demand at one point or the scatter of the demand over a wide area is another characteristic of the market which assumes major importance in some location cases. Where the entire output of a new plant is to be delivered to a single location, as in the case of a glass plant established by a company to supply their own lamp assembly plant, there is less freedom in the choice of the specific location than if the demand is more or less evenly spread over a large geographical area.

2. *Plant Requirements*

Once the size of a plant is decided upon, the formulation of a detailed list of requirements—land, buildings, materials, labor, transportation facilities, and local services—constitutes the next step in analysis. Only those areas which can provide at least the minimum quantities required of each of these elements will be considered. The production requirements will vary with the products to be manufactured and the process to be used. Some of the requirements will be available at most locations and will, therefore, not play an important role in the location decision. Others are highly localized and narrow the choice of location.

The staff will also study the possibilities of substitution, e.g., fuel oil for coal. Such an analysis often covers the entire range of materials, labor, transportation facilities, and local services in great detail.

3. *Other Considerations*

In many cases the straight production requirements will be supplemented by company policies which operate as additional standards to be met in selecting a location. Some companies will emphasize the living conditions of a town as important in retaining key personnel. At times, the availability of adequate recreational facilities has determined a specific plant location. Several companies have a policy of avoiding metropolitan industrial centers, partly to have less competition for labor and to avoid sympathetic labor disturbances. There may also be a policy against the employment of Negroes which would mean that the white labor supply in a possible location would have to fulfill all the labor requirements.

Another qualifying requirement often is the limited time available for commencing production. There may be an urgency to get into operation which will place the foremost emphasis on finding an available factory building. One manufacturer said his officials placed such a premium on getting into production quickly that when they finally discovered a building, "Our tongue was hanging out for it and we didn't bother to check into many other matters."

The Investigation

With both the location of the market to be served and the production requirements as determined by the type and the size of plant settled in advance, the search for a satisfactory location can begin. This search will usually be in two steps: selecting the general area and selecting the specific location. The general area usually centers around the given market, a source of materials (including electric power, fuel, and water), or a supply of labor.

Where the new plant is oriented to the market, the general area of the desirable location will be rather specifically identified by the market analysis made in the preliminary steps. As would be expected, the plants supplying an industrial market usually have a more concentrated demand and a smaller general area within which to locate a plant than

those producing for consumer markets. If the general area is small, the number of possible locations may also be small enough to permit the company to begin their field investigation immediately. Where the possible plant locations are numerous and are distributed over a large general area, the company sometimes gathers data by questionnaires or through the private and public industrial development groups in order to narrow the choice before beginning a lengthy and expensive field survey.

In general, most of the market oriented cases do not involve the compilation of extensive lists of prospective locations. Either the market pull is strong toward a small area or even a specific location, or the company has been supplying this market directly from some other location and is familiar enough with the general area to know where it wants to put the new plant.

If the new plant is oriented to a source of materials the investigation may follow one of two patterns. The first pattern occurs when the demand exists but the materials are in overall short supply and the problem is not to choose one of several possible sources but to find and develop several sources of supply. The dairy products and meat packing plants have been outstanding examples of this type of location because of the short supply of milk and meat in the postwar period. When prospective new supply areas are suggested by research within the company or by people outside the organization, the companies will make an intensive field investigation to ascertain whether the necessary supply is either actually or potentially available. The specific location of the plant within the area is then usually determined by the community upon whose promotional efforts the supply will depend or by the market center for purchasing the materials required.

The second pattern for locating material oriented plants involves more than one adequate source of materials for the new plant. Any one source of materials may cover a large geographical area so that several specific locations could be selected utilizing that source. A choice must therefore be made not only among sources but among specific locations tied to each source. There will be a natural preference for the supply nearest to the given market. This may be offset, however, by the inadequacy of reserves, by difficulties in purchasing the materials, or by other inadequacies. Two or more locations may come up as more or less equally desirable. Under such circumstances a review of the entire problem may be called for. Cities then will be visited by the company officials before the final decision.

The labor oriented plants can usually be located over a wide area. For such plants, transport costs are a minor portion of total costs and conse-

quently the extra transport costs which arise from locating away from the direct line between the source of materials and the market will not inflict a severe cost penalty. In looking for a new location the tendency is to fan out from the center of company operations for reasons of administrative economies until a satisfactory place is discovered.

In selecting a labor supply area, the company may have more specific requirements than a given quantity of male or female workers with certain skills. In locating the lower wage plants, like apparel, shoes, and textiles, the companies often insist on a relatively small town where the entire industrial labor force can be employed by the new plant. Other companies which were primarily interested in staying out of metropolitan areas established population limits for their plant location. One company specified cities of about 25,000 population and another company established a lower limit of 10,000 in working up their list of possible areas. Many of the shoe and apparel companies have established a practice of accepting local inducements, such as cash or factory space at nominal rentals. Consequently, only those communities willing to offer such inducements were given consideration.

Investigations were generally more lengthy in the labor oriented cases than in the others. This was due to the greater number of areas able to provide a labor supply and to the fact that many of the new companies attracted to the South by labor were not familiar with the region and did not have specific ideas about possible locations. Some companies worked through the railroads and other development agencies for suggestions, whereas others simply made up their first prospect list by selecting likely towns from a map. A few of the companies had been contacted by letter or in person by so many communities that they had only to go to their files to work up a prospect list whenever they were interested in locating a new plant. Still others worked with suggestions from customers or suppliers. Prior to field investigations, the list of possible areas was usually narrowed on the basis of ability to meet plant requirement.

The specific location within the general area will be the one which best meets the entire list of plant requirements. If the list of possibilities is large, certain standards, such as the requirement of having at least two railway lines, will be set up to reduce the list. If the choice is close among the remaining locations, the selection will be left to the overall judgment of the officials responsible. In all cases the company officials will personally visit and survey the locations being seriously considered.

The problem of selecting a plant location was greatly simplified in about one-tenth of the cases studied by investigating the apparently ob-

vious location and finding that it satisfactorily met all of the plant requirements. All but one of the cases in this category were market oriented plants to fit into one of two situations. Either the manufacturing plant was replacing a warehouse at a specific location, where the demand was highly concentrated geographically, or the new plant capacity was to supply a regional market in which a particular location was outstanding as the distribution center for the region, such as Atlanta in the Southeast.

Sources of Data and Techniques of Investigation

Procedure for assembling data varied with the size of the company. Some of the larger companies had facilities within their organizations for gathering data on specific locations. Their industrial relations or labor department provided information on labor supply, wage rates, labor laws, union organization, history of labor-industry relations, or any other aspect of the labor situation considered important. Some concerns' own employees made field labor surveys in prospective locations. The traffic department gathered information on transport facilities and rates. The real estate department aided in purchasing a site. If there were a sales office in the area being considered, it helped in gathering market data, contacting officials on local government matters, and in appraising the living conditions or community attitudes. Several companies made use of their sales organizations to handle the filling in of questionnaires and to survey the availability of suitable manufacturing buildings.

Whether or not the companies have specialized departments to work on finding a location (and most do not), extensive use was usually made of outside organizations. The industrial development departments of railroad companies were mentioned most often as useful sources of information.[1] Almost all of the states have industrial development or

[1] The major lines prepare source records which indicate the raw materials and industrial factors of all the states served. The variety of the subjects on which data are available is indicated by the materials assembled by one railroad:

Minerals: Each on a separate map, supplemented by tables showing location, chemical analysis, industrial use, and accessibility.

Coal: Each deposit is mapped and accompanied by tables showing chemical analysis and thermal values.

Water: All waters in streams are tabulated in terms of variations in flow, floods, location, mineral content. Subsurface waters are located and treated in terms of

(*Continued on page 144.*)

planning boards which are also called upon for help. Most communities have a Chamber of Commerce or other businessmen's organization prepared to handle inquiries and provide information about their areas. Other important agencies or organizations mentioned were the power companies and other public utilities; the university bureaus of business research and schools of agriculture; the agencies of the Federal Government, notably the Departments of Commerce, Labor, Agriculture and its Forestry Service, Interior including especially the Bureau of Mines and the Geological Survey, the industrial department of the Tennessee Valley Authority; and the regional Federal Reserve Banks.

Most of the state agencies are active in one way or another in industrial development work. At least one of the southern states has an office in the financial district of New York City to find and assist prospects. Although these agencies are frequently by-passed by the companies either because they are looked upon as purely promotional or because the companies are unaware of the type of assistance available, some companies mentioned the helpful service received from such agencies. Most state agencies do not have funds or trained personnel for industrial location work, but a few have developed excellent services. The Tennessee Valley Authority has made detailed studies on the prospective location of specific types of plants and is outstanding in the South for its industrial development work.

The questionnaire method is sometimes used to reduce a large list of prospective locations on the basis of information submitted by the cities before field investigations are made. Some companies, particularly those seeking a supply of labor, have used this method of direct contact with the communities as their sole method of gathering data. The scope of the inquiry may vary from a mere mention of the amount of floor space and employees required to a ten-page questionnaire. One of the latter forms requested the following information for a labor oriented plant:

(*Continued from page 143.*)
chemical and mineral analysis, flow, depth of well and need for pumping to develop an adequate flow.

Timber Resources: Shown by maps, colored to indicate actual locations of various types of woods, estimated reserves, county by county.

Electric Power Supply and Rates: Indicated for each zone served by railroad.

Gas Supply and Rates: Indicated for each zone served by railroad.

Buying Power: An analysis of each county's purchasing power.

Population and labor supply.

Climate.

Wholesaling and retailing outlets by counties.

Corporation and labor laws by states.

In addition to the files on the industrial characteristics of the area served, the railroads are usually equipped to make special studies for prospects when requested.

Prop location questions

1. Population of city.
2. Population of city area.
3. Population of county.
4. Population of nationalities (totals or percentages of each).
5. Number of foreign born.
6. Address of Chamber of Commerce and secretary or equivalent organization and man.
7. Name of manager and address of United States Employment Service.
8. Climate: Temperature extremes, average temperature.
9. Transportation (name of lines, type and frequency of service). Rail, bus, truck, air.
10. Utilities (name of companies and reliability of service). Electric, gas, water, telephone.
11. City government:
    Type
    Fire Department: number of firemen, volunteer or paid.
    Police Department: number of policemen.
    Bonded and financial condition of city itself.
    Tax rates: city, county, state.
    On what percentage of value is property assessed?
    Sewerage facilities.
    Percent of people in city owning their own homes.
12. Industry in city:
    Name of company, products, factory employees, male-female.
    Office employees: male-female, union organization, approximate number of years in city, home office and name of parent company if branch plant.
13. Available labor supply:
    Skilled: male, female; Semiskilled: male, female; Unskilled: male, female.
14. Number of strikes in last ten years.
15. Type of labor relations: Good, average, poor.
16. Is there a vocational school or equivalent?
17. Housing conditions.
18. Is area subject to extremes of weather (floods, blizzards, hurricanes, tornadoes, etc.)?
19. Is city government conservative, liberal, radical?
20. Has type of city government changed recently? How long has present city administration held office continuously?
21. Medical facilities.
22. Hotels.
23. What service clubs and associations are in city?
24. Do manufacturers have some form of association? If so, are they well knit into an organization?
25. Are there any available industrial plants or properties?

If plants, type of manufacturing previously done in plant.
Floor area in square feet.
Number of stories.
Is power and heat supply independent (not connected to an existing facility)?

26. Total number of persons employed in manufacturing industries.
27. Type of newspapers: Conservative, liberal, labor.
28. Hourly labor rates paid in city (for example, 60¢ to 75¢ might be the range for unskilled labor—each of the following should be filled out on that basis). Several types of skill were listed.

At some point in the process the company officials will personally visit the locations being considered to investigate and satisfy themselves as to such matters as site, community attitudes toward a new plant, local housing conditions, and the labor situation. One company president, with a fairly specific idea of the area within which he wanted to locate a plant, hired a friend to spend a year touring the area talking to community and local business people in order to narrow the choice to several of the more attractive locations. Another company, after marking out its "zone" by the location of the market, had two company officials spend six months visiting all towns of any considerable size within that area; the company executive said, "In some cases they even had to travel by bus in order to reach the towns." It is more usual, however, to postpone field investigations until the choice has been reduced to two or three communities.

Where labor is an important consideration, an extensive local survey may be made. The total supply of workers may be checked in several ways: with the local office of the United States Employment Service, local manufacturers, city officials, by personal contact sample studies, or by running advertisements in the papers asking people interested in jobs to register or fill in coupons and send them to a local office. Where there is concern about skills or productivity, aptitude exams have been given to people interested in securing employment. More often, however, productivity is checked with local employers. Workers' attitudes toward employment, union, etc., are sometimes discussed with local industrialists, priests, ministers, superintendents of schools and others.

Occasionally, finding a satisfactory factory site presents a problem. The local chambers of commerce have been very helpful in finding such sites and in some cases, in persuading local people to sell at reasonable prices. Because they want to purchase a site or property at the lowest possible price, many companies feel that it is important to conduct their investigation without revealing identity. One company even instructed its men, when investigating possible sites to take out their hatbands,

because a hatcheck girl in one community had noticed that all their hats were from the city known as the headquarters of the company. A few companies take the attitude that "if a town wants us they will see to it that we aren't hijacked in buying a site."

The Final Decision

The level at which the final location decision will be made within the company depends first on the importance of the investment in the company's operations, and secondly on the degree to which the administrative practices of the company have resulted in the delegation of authority.

Within the same company it may be customary to permit the operating division to make the final decision when the cost of the plant is small, and reserve the final decision on a major investment for the top level of management. Where the administrative structure of the company is highly decentralized, complete authority on such matters may be delegated to the operating subsidiary or department within an investment budget which is periodically approved by the board of directors. For example, both Westinghouse Electric and General Electric have a number of almost autonomous departments with headquarters in locations different from the company's main offices. The lamp departments, for example, will have almost complete responsibility for new lamp plant expansions and the other departments will handle their own similar locations. Other companies have subsidiaries which operate as almost independent companies. One senior vice president said: "Our policy is to let the person responsible for the final profits also be responsible for planning and locating new plants."

Before making the final decision, at whatever level, the committee or person charged with the task of finding the location, usually prepares detailed estimates of the cost of establishing and operating the new plant and the anticipated return on the investment at several possible locations. The inexperience of many companies has often meant that the final decision was made on the basis of inadequate data and incomplete analysis of the present and future problems involved in the selection of the location. Several examples exist of unbelievably bad and costly location decisions. When asked "How can companies select locations which result in hundreds of thousands or even millions of dollars of unnecessary cost each year?", a businessman explained that it was the

wide margin of profit in the industry (presumably as a result of monopolistic elements) which permitted companies to make such costly errors and still continue to exist. When industries are highly competitive, an uneconomic location will force a company out of business.

What are the criteria for evaluating the final decision? Primarily there is only one—the long-run profitability of the enterprise. Because of general uncertainties as to cost changes due to minimum wage legislation or other government action, shifts in the location of the markets and in consumer preferences, future problems of labor disturbances, and difficulties of securing materials, the decision cannot be a completely objective numerical calculation of all the necessary elements. One company feels that short-run gains are important enough to offset any future uncertainties. Another company feels that the future problems are of greater importance because the company hopes to experience sizeable expansions at the selected location.

The basis of the final decision may be the return on investment, where the choice is between locations which differ widely in cost advantages. But where more than one location would be almost equally satisfactory, the behavior and the reactions of the particular person making the decision are likely to be deciding factors. In the latter situation there is a large place for the selling job of states and communities. If a particular location is being seriously considered and satisfies the production requirements of the company, a good impression by the community representatives may make the final difference. Moreover, even though a location fulfills the company's needs, an unwelcome attitude on the part of the community leaders or the local manufacturers will usually be sufficient justification to the company for not selecting such a location. Many company executives have emphasized, "We want to go where we are wanted, and there are many cities which have strong internal groups who are opposed to new industry."

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